Bowen Elementary School

280 Cypress Street
Newton Centre, MA 02459

Countryside Elementary School

191 Dedham Street
Newton highlands, MA 02461

Boiler Room Renovation Project

PREPARED FOR

City Of Newton

Public Buildings

SETTI WARREN / MAYOR

DRAWING LIST

PREPARED BY

RDK ENGINEERS

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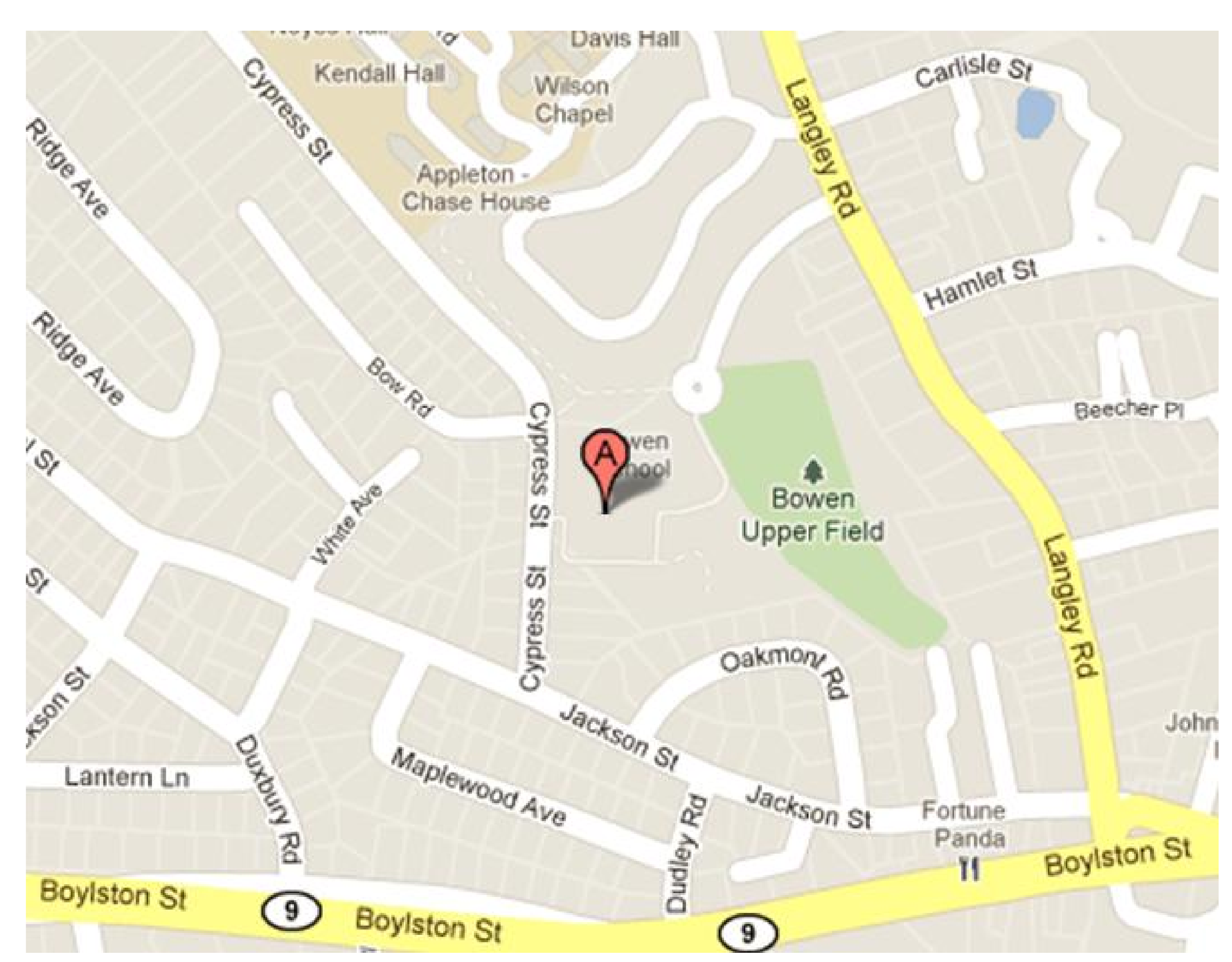
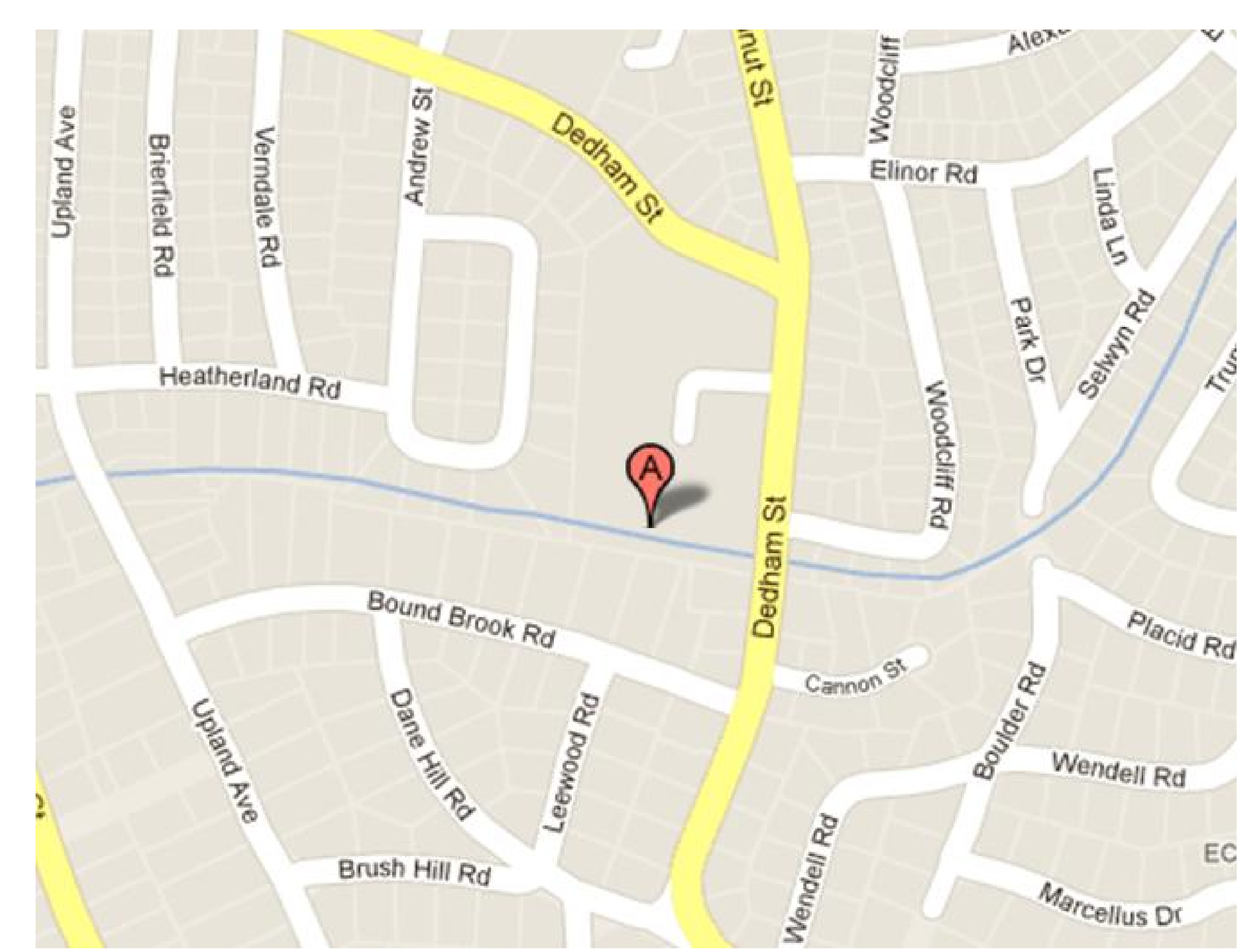
LOCUS PLAN



Bowen Elementary School



Countryside Elementary School

100% CONTRUCTION DOCUMENTS
09-02-2011

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REVISIONS

▲	DATE	CHK	DESCRIPTION

SEAL

PROJECT

NUMBER
20110321

DATE
09-02-11

NEWTON PUBLIC SCHOOLS
BOWEN/COUNTRYSIDE ELEMENTARY SCHOOL
BOILER RENOVATION
NEWTON, MA 02459

DRAWING

DRAWN BY
MW

CHECKED BY
WW

SCALE
NONE

TITLE SHEET

T0.00

RDK

NOTES

GENERAL NOTES

1. DRAWINGS ARE DIAGRAMMATIC FOR DESIGN INTENT. CONTRACTOR IS RESPONSIBLE TO COORDINATE LOCATIONS WITHOUT ANY CHANGES TO SIZES, MATERIALS OR EQUIPMENT TYPES.

2. ALL NOTES LISTED IN THE CONTRACT DOCUMENTS HEREIN SHALL ALSO SERVE AS A CHECKLIST FOR INSPECTION AND COMMISSIONING PURPOSES.

3. FOR DISCREPANCIES, THE WORK CONTAINING THE HIGHER QUALITY (AND ASSOCIATED HIGHER COSTS) SHALL BE CARRIED AND THE SITUATION BROUGHT TO THE ATTENTION OF THE ENGINEER.

4. ALL NOTES ARE PART OF THE CONTRACT DOCUMENTS. ANY EXCEPTIONS SHALL BE STATED IN WRITING TO THE ENGINEER DURING PRE BID PERIOD.

5. ALL WORK IN ALL TRADES SHALL BE EXECUTED IN FULL ACCORDANCE WITH THE CURRENT RULINGS OF THE LATEST EDITION OF THE STATE BUILDING CODE, IT'S REFERENCES TO OTHER CODES, STATE AND LOCAL RULINGS, NFPA AND OWNER'S FACILITIES ENGINEERING STANDARDS.

6. ALL MATERIAL AND EQUIPMENT SHALL BE NEW (UNLESS OTHERWISE SPECIFIED), LISTED, WHERE APPLICABLE UNDER THE OWNER'S INSURANCE UNDERWRITING REQUIREMENTS, AND BE UL LISTED.

7. "PROVIDE" SHALL BE TO "FURNISH AND INSTALL".

8. PROVIDE SPECIFIED MATERIALS AND EQUIPMENT WITHOUT SUBSTITUTION, UNLESS "EQUAL" OR "APPROVED EQUAL" IS EXPLICITLY INDICATED ON THE CONTRACT DOCUMENTS. IN SUCH CASE, SUBMIT SUBSTITUTIONS WITH ALL MECHANICAL PERFORMANCE INFORMATION TO ENGINEER FOR REVIEW.

9. PRIOR TO JOB EXECUTION, TRADE CONTRACTOR SHALL SUBMIT (COMPLETE, NOT PARTIAL OR PROGRESS, THEY'LL BE REJECTED) TO THE ENGINEER FOR REVIEW: 1) THEIR TRADE LAYOUT SHOP DRAWINGS INDICATING ALL EQUIPMENT AND MATERIAL LAYOUTS WITH SIZES, LOCATIONS OFF WALLS AND COLUMN LINES, BOTTOM & TOP ELEVATIONS, VIBRATION ISOLATION AND HANGER LOCATIONS ALL COORDINATED SO AS TO NOT INTERFERE WITH OTHER TRADES. ELECTRICAL CONTRACTOR SHALL SUBMIT LAYOUT DRAWINGS WITH ALL PANELBOARDS, TRANSFORMERS, MAJOR EQUIPMENT AND FEEDER RUNS AND COORDINATE MECHANICAL SERVICES ARE NOT IN THEIR "AIR SPACE" PER THE NATIONAL ELECTRIC CODE; 2) EQUIPMENT SUBMITTALS INDICATING THE DRAWING TAG, PERFORMANCES, MANUFACTURER AND MODEL NUMBER, POWER REQUIREMENTS, DIMENSIONS AND ACCESSORIES.

10. TRADE FOREMAN SHALL MAINTAIN A SET OF WORKING DRAWINGS AND MARK THEM UP WITH THE AS-BUILT INFORMATION AS THE PROJECT PROGRESSES. THE MARKED UP SET SHALL BE SUBMITTED WITH A CLEAN SET OF AS-BUILT DRAWINGS AT JOB COMPLETION. THE MARKED UP SET AND THE AS-BUILTS SHALL BE SUBMITTED AS A SHOP DRAWING AND IS SUBJECT TO APPROVAL.

11. GENERAL CONTRACTOR SHALL TAKE HVAC, PLUMBING AND ELECTRICAL TRADE LAYOUT SHOP DRAWINGS AND PRODUCE ONE COORDINATED SET TO INDICATE AND RESOLVE ANY CONFLICTS AND REQUIRED CLEARANCES REQUIRED FOR EACH TRADE INCLUDING THOSE FOR THE ELECTRICAL EQUIPMENT PER THE NATIONAL ELECTRIC CODE.

12. TRADE CONTRACTOR SHALL SUBMIT COMPLETE (PARTIALS WILL BE REJECTED) OPERATION AND MAINTENANCE MANUALS (O&M'S) UPON JOB COMPLETION. THE O&M'S SHALL INCLUDE THE MANUFACTURER, MODEL NUMBER, INSTALLATION INSTRUCTIONS, OPERATION AND MAINTENANCE INSTRUCTIONS, WARRANTY PERIOD AND WARRANTY COVERAGE AND MANUFACTURER'S REPRESENTATIVE'S TELEPHONE AND ADDRESS AS WELL AS MANUFACTURER'S TELEPHONE AND ADDRESS.

13. TRADE CONTRACTOR SHALL PROVIDE A MINIMUM OF 8 HOURS OF ON-SITE TRAINING COVERING THE OVERALL INSTALLATION, THE OPERATION METHODS AND PERIODIC MAINTENANCE REQUIREMENTS OF THEIR EQUIPMENT.

14. TRADE CONTRACTOR SHALL PROVIDE A MINIMUM OF ONE YEAR, 24HR SERVICE, LABOR, TROUBLESHOOTING AND PARTS WARRANTY.

15. TRADE CONTRACTOR SHALL SUBMIT TO OWNER THE PERSON TO CONTACT WHEN SERVICE IS REQUIRED UNDER THE WARRANTY PERIOD.

16. TRADE SHALL SEAL NEW AND EXISTING FIRE RATED PENETRATIONS WITH APPROVED FIRE STOPPING.

17. CONTRACTOR SHALL COORDINATE PHASING OF THE PROJECT WITH OWNER FOR SHUTDOWNS, DEMOLITION AND TEMPORARY OPERATION.

18. CONTRACTOR SHALL PERFORM ALL SHUTDOWNS AND OTHER NECESSARY OFF-HOURS WORK ON OFF-HOURS AND ACCOUNT FOR THE REQUIRED OVERTIME.

19. CONTRACTOR SHALL PROCURE ALL NECESSARY PERMITS.

20. THE CONTRACTOR SHALL NOTIFY THE OWNER AND ENGINEER PRIOR TO CLOSING ANY CEILINGS FOR A COMPLETE CHECK-OUT OF THE HVAC SYSTEM. THE SYSTEM MUST BE COMPLETE AND OPERATIONAL INCLUDING CONTROLS, REGISTERS, INSULATION, AND BALANCING WITH REPORT. THE SYSTEM SHALL BE RUN THROUGH ITS COMPLETE HEATING AND COOLING CYCLES. THE CONTRACTOR AND ALL APPROPRIATE SUBCONTRACTORS SHALL BE PRESENT AT THE ARCHITECT-ENGINEER CHECK-OUT, DURING WHICH THE EQUIPMENT AND CONTROLS SHALL BE OPERATED THROUGH THEIR COMPLETE OPERATIONAL HEATING AND COOLING CYCLES.

21. THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE TO ASSURE THAT ALL WORK BY THE SUBCONTRACTORS IS INSTALLED AND COMPLETED IN ACCORDANCE WITH THE DRAWINGS AND SPECIFICATIONS AND THAT ALL MEP WORK IS 100% COMPLETE AT THE TIME OF BENEFICIAL OCCUPANCY.

22. TIME IS OF THE ESSENCE ON THESE PROJECTS AND ALL SYSTEMS MUST BE COMPLETELY OPERATIONAL WITHOUT DEFECTIVE INSTALLATION OR DEFECTIVE MATERIALS. THE OWNER EXPECTS ALL SYSTEMS TO BE INSTALLED PROPERLY THE FIRST TIME, OPERATE TO SPECIFICATIONS AND BE COMPLETE AT THE TIME OF BENEFICIAL OCCUPANCY. THE OWNER CANNOT TOLERATE ANY LOST TIME TO RESEARCH OR TEACHING AND THEIR ASSOCIATED SPACES DUE TO DEFECTIVE OR IMPROPERLY INSTALLED MECHANICAL EQUIPMENT. THEREFORE, IF ANY SYSTEMS ARE FOUND TO HAVE DEFECTIVE INSTALLATION OR MATERIALS AT BENEFICIAL OCCUPANCY, THE OWNER HAS THE RIGHT TO IMMEDIATELY HAVE CORRECTIVE WORK PERFORMED BY OTHERS AND BACK CHARGE THESE COSTS TO THE CONTRACTOR.

23. ALL SUPPORTS SHALL BE SEISMICALLY RESTRAINED PER MASSACHUSETTS STATE BUILDING CODE.

SITE VISIT NOTES

1. BEFORE SUBMITTING BID, VISIT THE SITE AND CAREFULLY EXAMINE SITE TO IDENTIFY EXISTING CONDITIONS AND DIFFICULTIES THAT WILL AFFECT WORK OF THIS SECTION. NO EXTRA PAYMENT WILL ALLOWED FOR ADDITIONAL WORK CAUSED BY UNFAMILIARITY WITH SITE CONDITIONS THAT ARE VISIBLE OR READILY CONSTRUED BY AN EXPERIENCED OBSERVER.

2. BEFORE STARTING WORK IN A PARTICULAR AREA OF THE PROJECT VISIT THE SITE AND EXAMINE CONDITIONS UNDER WHICH WORK MUST BE PERFORMED INCLUDING ALL PREPARATORY WORK DONE UNDER OTHER SECTIONS, CONTRACTS OR BY OWNER. REPORT CONDITIONS THAT MIGHT AFFECT WORK ADVERSELY IN WRITING THROUGH GENERAL CONTRACTOR TO ENGINEER. DO NOT PROCEED WITH WORK UNTIL DEFECTS HAVE BEEN CORRECTED AND CONDITIONS ARE SATISFACTORY. COMMENCEMENT OF WORK SHALL BE CONSTRUED AS COMPLETE ACCEPTANCE OF EXISTING CONDITIONS AND PREPARATORY WORK.

SAFETY NOTES

IMPORTANT SAFETY NOTES TO GENERAL CONTRACTOR (GC) AND/OR CONSTRUCTION MANAGER (CM) AND THEIR SUBCONTRACTORS

1) THESE DOCUMENTS ARE FOR DESIGN INTENT TO INDICATE THE REQUIRED MECHANICAL AND ELECTRICAL SYSTEMS, THEIR COMPONENTS, THEIR SIZES, CAPACITIES AND INSTALLATION LAYOUTS ONLY.

2) THE GC/CM AND THEIR SUBCONTRACTORS (NOT THE ENGINEERS) ARE RESPONSIBLE FOR PROPER SAFETY MEASURES, METHODS AND MEANS OF PROCUREMENT AND INSTALLATION OF SYSTEMS AND EQUIPMENT, AND PROPER SUPERVISION BY TRAINED AND COMPETENT PERSONNEL.

3) THE GC/CM AND THEIR SUBCONTRACTORS (NOT THE ENGINEERS) ARE RESPONSIBLE TO PROVIDE FACTORY AUTHORIZED PERSONNEL TO SUPERVISE AND/OR EXECUTE THE COMPLETE FACTORY RECOMMENDED CHECKOUT PROCEDURE DOCUMENTATION FOR THEIR RESPECTIVE EQUIPMENT INCLUDING BUT NOT LIMITED TO: PROPER OPERATION, SAFETIES AND PERSONNEL PROTECTION MEASURES PRIOR TO ENERGIZING THE EQUIPMENT AND TURNOVER TO OWNER. THIS IS ESPECIALLY IMPORTANT FOR ALL ELECTRICAL EQUIPMENT AND SYSTEMS, ROTATING EQUIPMENT AND MECHANICAL SYSTEMS WITH POTENTIALLY HARMFUL PRESSURES AND TEMPERATURES. THIS DOCUMENTATION IS ALSO REQUIRED AS A SUBMITTAL FOR REVIEW BY THE ENGINEERS INDICATING THIS WORK HAS BEEN EXECUTED BY OR WITH FACTORY PERSONNEL AND IS COMPLETE TO THE FACTORY'S SIGN-OFF.

4) THE GC/CM AND THEIR SUBCONTRACTORS (NOT THE ENGINEERS) ARE RESPONSIBLE TO PROVIDE ALL PROPER AND SAFE STRUCTURAL SUPPORTS NECESSARY FOR THE MECHANICAL AND ELECTRICAL SYSTEMS, INCLUDING INTERIM SUPPORTS WHICH INCLUDE BUT ARE NOT LIMITED TO: HANGERS, VERTICAL AND HORIZONTAL SUPPORTS, SHORING, ANCHORS, ETC. THE GC/CM AND THEIR SUBCONTRACTORS (NOT THE ENGINEERS) ARE RESPONSIBLE TO COORDINATE ALL STRUCTURAL METHODS AND MEANS AND THEIR ELEMENTS WITH THE PROJECT STRUCTURAL ENGINEER.

5) THE GC/CM AND THEIR SUBCONTRACTORS (NOT THE ENGINEERS) ARE RESPONSIBLE INTER-TRADE COORDINATION FOR INSTALLATION AND ASSOCIATED SAFETY CONSIDERATIONS AS A RESULT OF COORDINATING THE MECHANICAL, ELECTRICAL, STRUCTURAL AND ARCHITECTURAL SYSTEMS.

AUTOMATIC CONTROLS NOTES

1. THE AUTOMATIC CONTROLS CONTRACTOR SHALL COORDINATE WITH ALL TRADES AND PROVIDE ALL NECESSARY ELECTRIC POWER, ELECTRICAL AND MECHANICAL HARDWARE FOR THE CONTROL SYSTEM IN ORDER TO PERFORM THE SEQUENCE OF OPERATIONS DESCRIBED IN THE CONTRACT DOCUMENTS.

2. THE CONTRACTOR SHALL PROVIDE A STARTUP AND CHECKOUT REPORT INDICATING THE PERFORMANCE OF THE CONTROL SYSTEMS AND SUBMIT TO THE ENGINEER FOR REVIEW.

3. ANY MALFUNCTIONING OR INCOMPLETE EQUIPMENT THE CONTRACTOR IS CONTROLLING SHALL BE REPORTED TO THE ENGINEER AND THE GENERAL CONTRACTOR.

4. THE CONTRACTOR SHALL ALLOW 40 HRS OF REPROGRAMMING, ABOVE THE REQUIRED HOURS TO FULFILL THE CONTRACT DOCUMENTS. THIS 40 HOURS IS TO ALLOW FOR COMMISSIONING ISSUES THAT MAY REQUIRE PROGRAM MODIFICATIONS.

5. CONTRACTOR SHALL PROVIDE 8 HOURS OF ON-SITE TRAINING. THE CONTRACTOR SHALL WARRANT THE CONTROL SYSTEM PER THE WARRANTY REQUIREMENTS LISTED UNDER THE GENERAL NOTES.

6. CONTRACTOR SHALL COORDINATE WITH BALANCING CONTRACTOR TO ADJUST ALL CONTROLLER READINGS.

7. ALL CONTROLS SHALL BE OWNED BY THE ATC CONTRACTOR INCLUDING WIRING OF LOW VOLTAGE AND 110 VOLT CONTROL EQUIPMENT. CONTROL VALVES AND THERMOSTATS SHALL BE ELECTRIC.

GENERAL DEMOLITION NOTES

1. PRIOR TO ANY EXECUTION OF WORK, CONTRACTOR SHALL MEET WITH OWNER, AND ENGINEER AND DISCUSS SCOPE OF DEMOLITION.

2. PRIOR TO ANY DEMOLITION, ISOLATION OF SYSTEMS OR SHUTDOWNS, CONTRACTOR SHALL FIELD TRACE AND VERIFY SYSTEM TO BE WORKED ON AND NOTIFY FACILITIES ENGINEERING/MAINTENANCE OF WORK TO BE PERFORMED SO AS TO AVOID ANY DETRIMENTAL SHUTDOWN OF SYSTEMS.

3. CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING SAFETY BY CUTTING AND MAKING SAFE ANY DEMOLITION WORK.

4. CONTRACTOR SHALL NOTIFY OWNER AND ENGINEER OF ANY SITUATIONS THAT DIFFER OR ENHANCE THE SCOPE OF WORK FROM THAT DESCRIBED IN THE DOCUMENTS.

5. CONTRACTOR SHALL COORDINATE PHASING OF THE PROJECT WITH THE OWNER FOR SHUTDOWNS, DEMOLITION AND TEMPORARY OPERATION.

6. UPON REMOVAL, ALL HVAC EQUIPMENT SHALL BE DISPOSED OF EXCEPT MAJOR ITEMS WHICH THE CONTRACTOR SHALL INVENTORY AND SUBMIT A LIST TO THE OWNER. ALL ITEMS NOT RETAINED BY OWNER SHALL BECOME PROPERTY OF THE CONTRACTOR AND SHALL BE DISPOSED OF PROPERLY.

HVAC SHEETMETAL NOTES

1. DUCT SIZES SHOWN ARE ACTUAL. DO NOT ADJUST FOR INSULATION IF APPLICABLE.

2. DUCT FITTINGS SHOWN ARE TO BE PROVIDED. NO SUBSTITUTIONS ARE ALLOWED UNLESS WRITTEN APPROVAL IS OBTAINED FROM THE ENGINEER.

3. DO NOT USE MITERED ELBOWS WITH TURNING VANES. USE RADIUS ELBOWS (WITH SPLITTER VANES IF REQUIRED). PROVIDE 5 PIECE ELBOWS ON ALL PVC, ROUND AND OVAL DUCTWORK.

4. ALL SHEETMETAL WORK SHALL CONFORM TO THE LATEST SMACNA STANDARDS.

5. DUCTWORK SHALL HAVE THE FOLLOWING CLASSIFICATIONS:
2"W.C.(NEG OR POS): DUCTWORK LEADING INTO SPACE.
SMACNA SEAL CLASS "A" AND LEAKAGE CLASS "3".
ALL DUCTS SHALL BE PRESSURE TESTED TO 125% OF RATING.

6. PROVIDE MINIMUM 12"X12" HINGED WITH WINDOW LOCK ACCESS DOORS ON INLET SIDE OF ALL IN-DUCT COILS TO ALLOW INSPECTION AND CLEANING.

7. FOR 2"W.C. AND LOWER, PROVIDE A MINIMUM OF 9"X9" HINGED ACCESS DOOR TO ALL AUTOMATIC CONTROL DAMPERS, SMOKE DAMPERS AND FIRE DAMPERS. FOR HIGHER THAN 2"W.C. PROVIDE DUCTMATE "SANDWICH" ACCESS DOORS.

8. SEAL ALL DUCT CONNECTIONS WITH HARDCAST VERSA-GRIP 102 OR APPROVED EQUAL. PROVIDE PROPER VENTILATION WHEN APPLYING SOLVENT BASED SEALANT. DO NOT APPLY SEALANT AT TEMPERATURES BELOW 40 DEGF.

9. SUPPORT ALL DUCTS FROM STRUCTURE.

10. PROVIDE PROPER HANGER SUPPORTS FROM STRUCTURE TO ALL DUCTWORK.

11. PROVIDE CANVAS FLEX CONNECTIONS FOR ALL INLET OF EXHAUST FANS.

LENGEND

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
LPS	LOW PRESSURE STEAM		RELIEF (R) OR SAFETY (S) VALVE
LPC	LOW PRESSURE CONDENSATE	S	SOLENOID VALVE
BD	BOILER BLOW DOWN		FUSABLE LINK VALVE
PC	PUMPED CONDENSATE		PRESSURE GAUGE AND COCK
BF	BOILER FEED	PS	PRESSURE SWITCH
NPW	NON-POTABLE WATER		THERMOMETER
(X)	EXISTING TO REMAIN		STRAINER WITH BLOWOFF VALVE
	EXISTING TO REMOVE		AND CAPPED HOSE-THREAD CONNECTION
V	VENT	T	THERMOSTAT
D	DRAIN		STEAM TRAP, FLOAT & THERMOSTATIC
FOR	FUEL OIL RETURN		STEAM TRAP, THERMOSTATIC
FOS	FUEL OIL SUPPLY		CONNECT INTO EXISTING
	COLD WATER (CW)		REMOVE TO THIS POINT
(X)	NEW PIPING	C.O.	CLEANOUT DOOR
	UNION		FLOW SWITCH
	BALL VALVE		CAP
	MOTORIZED BUTTERFLY VALVE		STEAM UNIT HEATER
	BUTTERFLY VALVE		DEMOLITION UNIT VENTILATION
	GATE VALVE		DEMOLITION
	PLUG VALVE		
	OUTSIDE STEM & YOKE VALVE		
	BACKFLOW PREVENTER		
	SWING CHECK VALVE		
	SPRING CHECK VALVE		
	PIPING INCREASER OR DECREASER		
	HOSE END DRAIN VALVE		

ABBREVIATIONS

AFF	ABOVE FINISHED FLOOR
ATC	AUTOMATIC TEMPERATURE CONTROLS
B	BOILER
BFU	BOILER FEED UNIT
BTUH	BRITISH THERMAL UNIT'S PER HOUR
CA	COMBUSTION AIR
CFM	CUBIC FEET PER MINUTE
CL	CENTERLINE
CONN.	CONNECT
CONT	CONTINUATION
CTU	CONDENSATE TRANSFER UNIT
DB	DRYBULB
DIA	DIAMETER
DN	DOWN
EA	EXHAUST AIR
EL	ELEVATION
ER	EXHAUST REGISTER
ESP	EXTERNAL STATIC PRESSURE
ETR	EXISTING TO REMAIN
EXIST.	EXISTING
F&T.	FLOAT & THERMOSTATIC TRAP
FAT	FINAL AIR TEMPERATURE
FL	FLOOR
FLA	FULL LOAD AMPS
FT	FEET
FTR	FINTUBE RADIATION
GPM	GALLON PER MINUTE
HP	HORSEPOWER
IN	INCHES
KW	KILOWATT
LWCO	LOW WATER CUTOFF
MBH	1000xBTUH
MCA	MUNUMUM CIRCUIT AMPS
OA	OUTSIDE AIR
P	PUMP
PSIG	POUNDS PER SQUARE INCH, GAUGE
QTY	QUANTITY
RA	RETURN AIR
RAD	RADIATOR
REF	ROOF EXHAUST FAN
RLA	RUNNING LOAD AMPS
RPBP	REDUCED PRESSURE BACKFLOW PREVENTOR
RPM	REVOLUTION PER MINUTE
SF	SQUARE FEET
SP	STATIC PRESSURE
T.T.	THERMOSTATIC TRAP
TSP	TOTAL STATIC PRESSURE
TYP.	TYPICAL
UV	UNIT VENTILATOR
(XXX CFM)	BALANCE REGISTER TO INDICATED CFM

EXISTING EQUIPMENT LEGEND

XM	EXISTING EQUIPMENT TO REMAIN
X	EXISTING EQUIPMENT TO BE REMOVED

100% CONTRUCTION DOCUMENTS
09-02-2011

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REVISIONS

DATE	CHK	DESCRIPTION

SEAL

PROJECT

NUMBER 20110321

DATE 09-02-11

NEWTON PUBLIC SCHOOLS
BOWEN/COUNTRYSIDE ELEMENTARY SCHOOL
BOILER RENOVATION
NEWTON, MA 02459

DRAWING

DRAWN BY KVM

CHECKED BY WW

SCALE NONE

MECHANICAL LEGENDS, NOTES AND ABBREVIATIONS

M0.00

BOILER ROOM DEMOLITION NOTES:

1. PRIOR TO ANY EXECUTION OF WORK, CONTRACTOR SHALL MEET WITH OWNER, AND ENGINEER AND DISCUSS SCOPE OF DEMOLITION.

2. PRIOR TO ANY DEMOLITION, ISOLATION OF SYSTEMS OR SHUTDOWNS, CONTRACTOR SHALL FIELD TRACE AND VERIFY SYSTEM TO BE WORKED ON AND NOTIFY FACILITIES ENGINEERING/MAINTENANCE OF WORK TO BE PERFORMED SO AS TO AVOID ANY DETRIMENTAL SHUTDOWN OF SYSTEMS.

3. CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING SAFETY BY CUTTING AND MAKING SAFE ANY DEMOLITION WORK.

4. CONTRACTOR SHALL NOTIFY OWNER AND ENGINEER OF ANY SITUATIONS THAT DIFFER OR ENHANCE THE SCOPE OF WORK FROM THAT DESCRIBED IN THE DOCUMENTS.

5. CONTRACTOR SHALL COORDINATE PHASING OF THE PROJECT WITH THE OWNER FOR SHUTDOWNS, DEMOLITION AND TEMPORARY OPERATION.

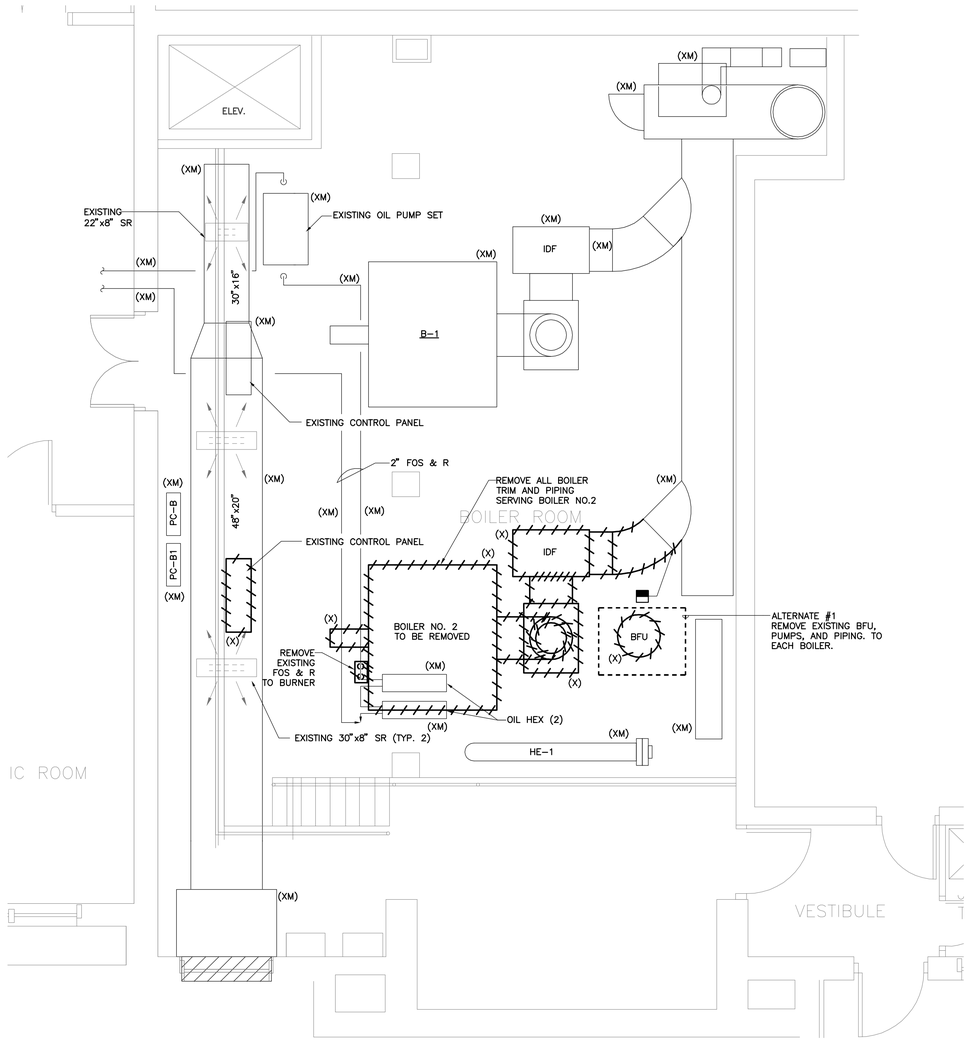
6. UPON REMOVAL, ALL EQUIPMENT SHALL BE DISPOSED OF EXCEPT MAJOR ITEMS, WHICH THE CONTRACTOR SHALL INVENTORY AND SUBMIT A LIST TO THE OWNER. ALL ITEMS NOT RETAINED BY OWNER SHALL BECOME PROPERTY OF THE CONTRACTOR AND SHALL BE DISPOSED OF PROPERLY.

7. EXISTING BREECHING AND ALL ASSOCIATED SUPPORTS, INSULATION, FANS AND ANY OTHER APPURTENANCES TO BE REMOVED.

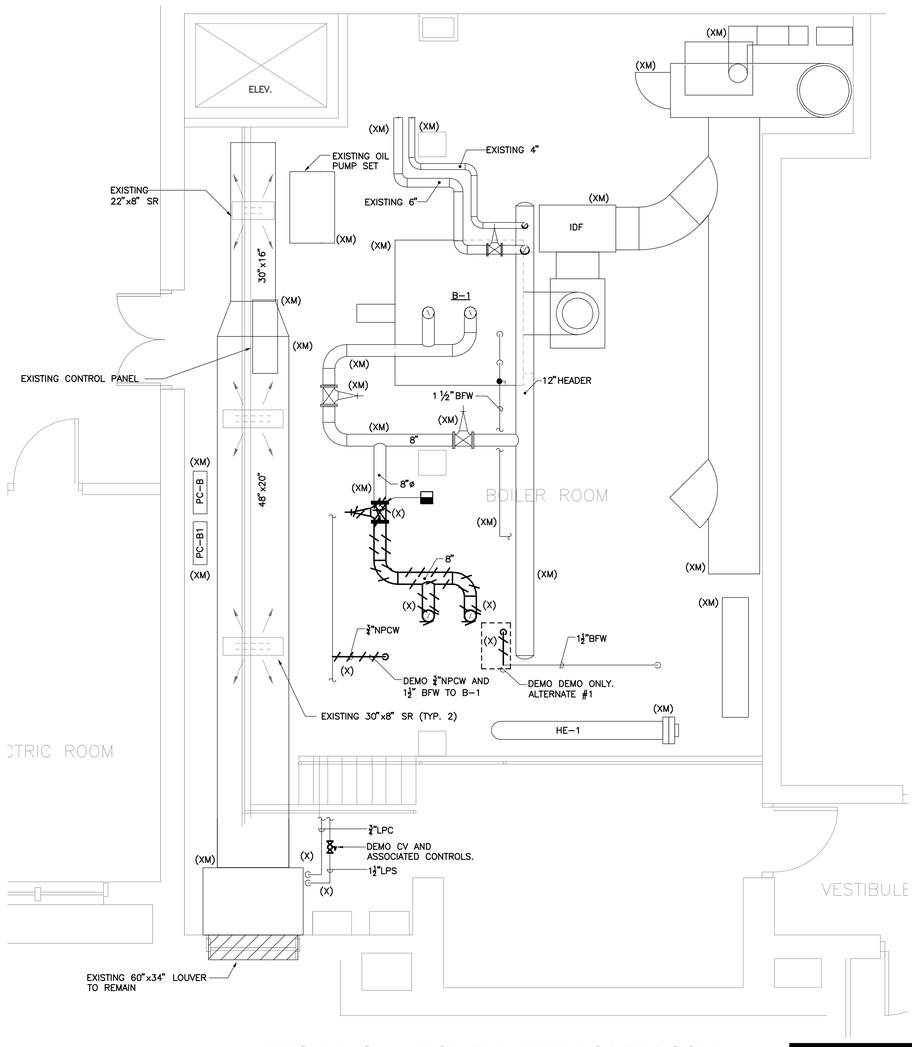
8. ALL EXISTING PIPING WITHIN BOILER ROOM AND ALL ASSOCIATED SUPPORTS, VALVES, CONTROLS AND ANY OTHER APPURTENANCES TO BE REMOVED AND CUT AND CAP. CUT AND CAP ALL GAS PIPING AT BOILER TO THE EXTENT SHOWN.

9. EXISTING BOILERS AND ALL ASSOCIATED BURNERS, SUPPORTS, INSULATION, VALVES, PIPING, CONTROLS, PUMPS, EXPANSION TANKS, CHEMICAL SHOT FEEDERS AND ANY OTHER BOILER APPURTENANCES TO BE REMOVED.

10. RECOMMENDED PATH FOR CONTRACTOR TO REMOVE DEMOLISHED EQUIPMENT AND TO RIG IN NEW EQUIPMENT. CONTRACTOR TO REMOVE DOOR, DOOR FRAME, AND CMU TO THE LIMITS NECESSARY FOR PASSAGE OF NEW EQUIPMENT. PROVIDE TEMPORARY SHORING AS REQUIRED TO SUPPORT NEW OPENING. AFTER RIGGING IS COMPLETE REPAIR OPENING AND INSTALL EXISTING DOOR.



MECHANICAL - BOWEN LOWER BOILER ROOM
DEMOLITION PART PLAN
SCALE: 1/4"=1'-0"

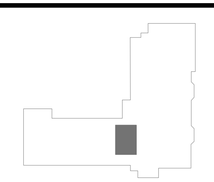


MECHANICAL - BOWEN UPPER BOILER ROOM
DEMOLITION PART PLAN
SCALE: 1/4"=1'-0"

100% CONTRUCTION DOCUMENTS
09-02-2011

1/4" = 1' - 0"
0 4' 8'

MD2.00



KEYPLAN

RDK ENGINEERS

Andover, MA
Boston, MA
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Durham, NC
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BOILER RENOVATION
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DRAWN BY KVM

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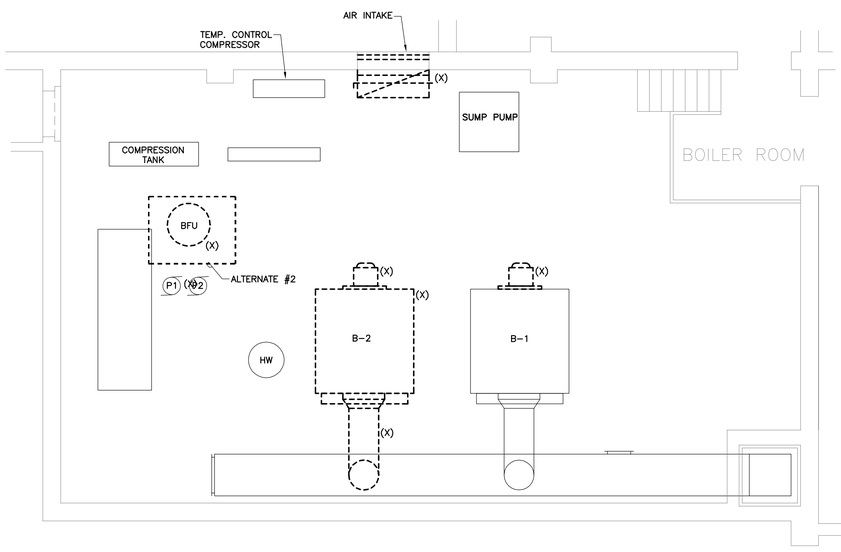
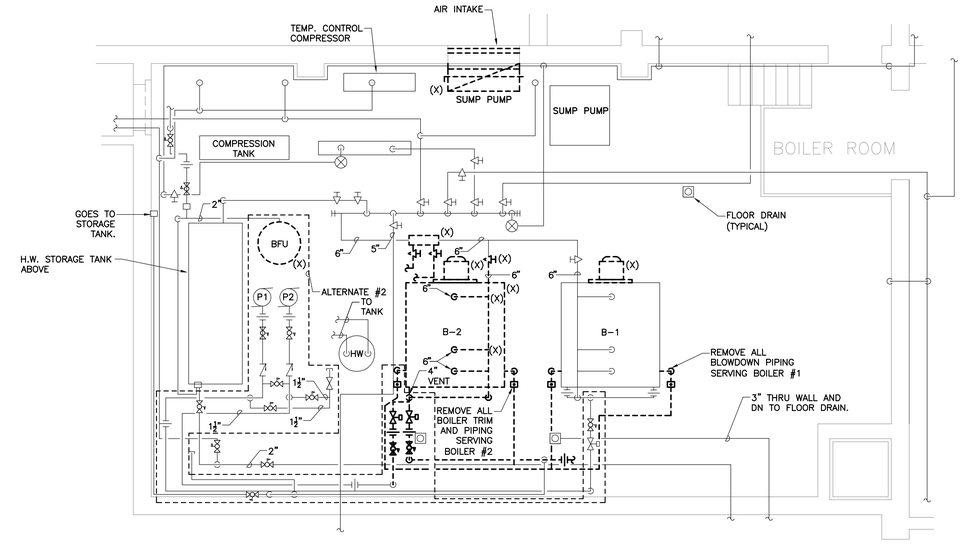
SCALE AS NOTED

MECHANICAL
BOWEN BOILER ROOM
DEMOLITION
PART PLANS



MECHANICAL - COUNTRYSIDE BOILER ROOM BREECHING DEMOLITION PART PLAN

SCALE: 1/4"=1'-0"



MECHANICAL - COUNTRYSIDE BOILER ROOM PIPING DEMOLITION PART PLAN

SCALE: 1/4"=1'-0"

KEYPLAN

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DATE 09-02-11

NEWTON PUBLIC SCHOOLS
BOWEN/COUNTRYSIDE ELEMENTARY SCHOOL
BOILER RENOVATION
NEWTON, MA 02459

DRAWING

DRAWN BY KVM

CHECKED BY WW

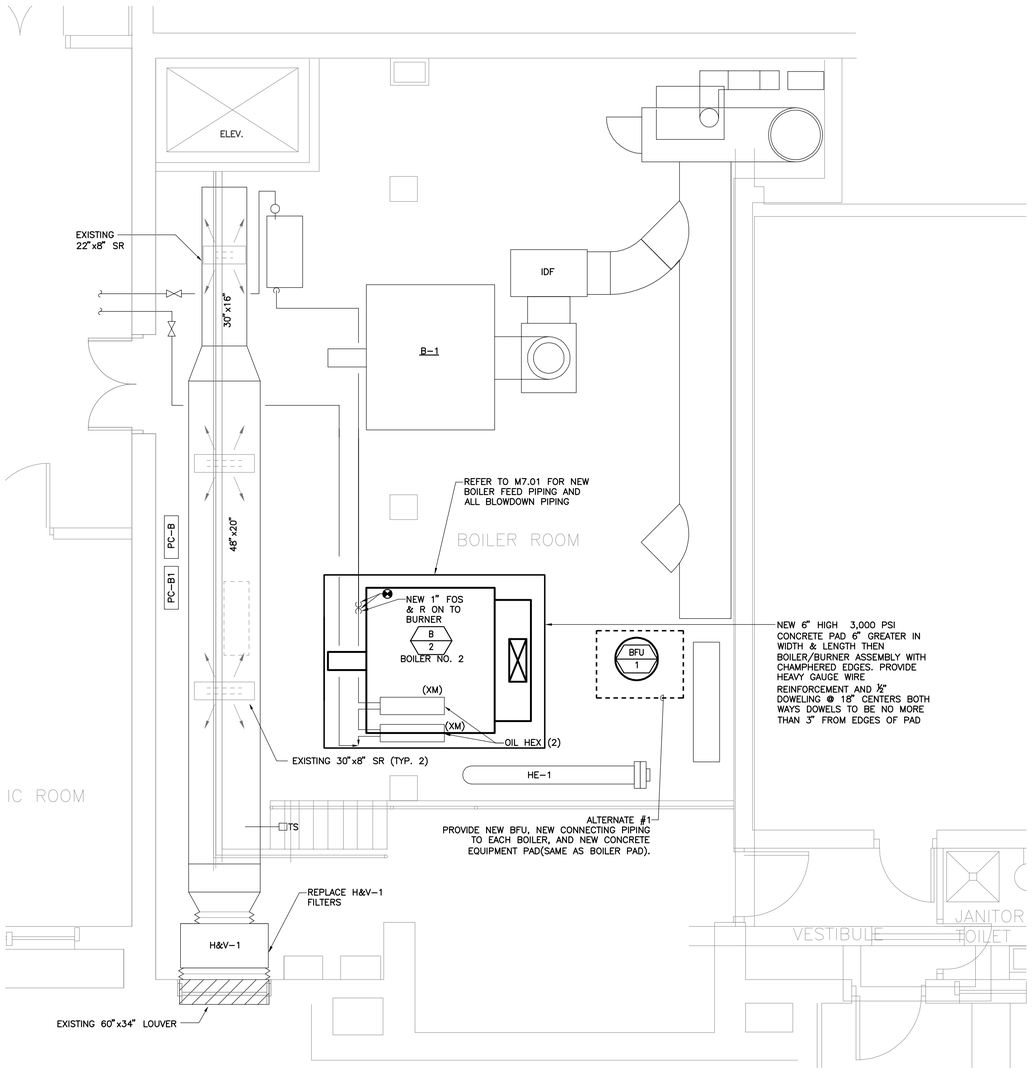
SCALE AS NOTED

MECHANICAL
BOILER ROOM
DEMOLITION PLAN
PART PLAN

100% CONTRUCTION DOCUMENTS
09-02-2011

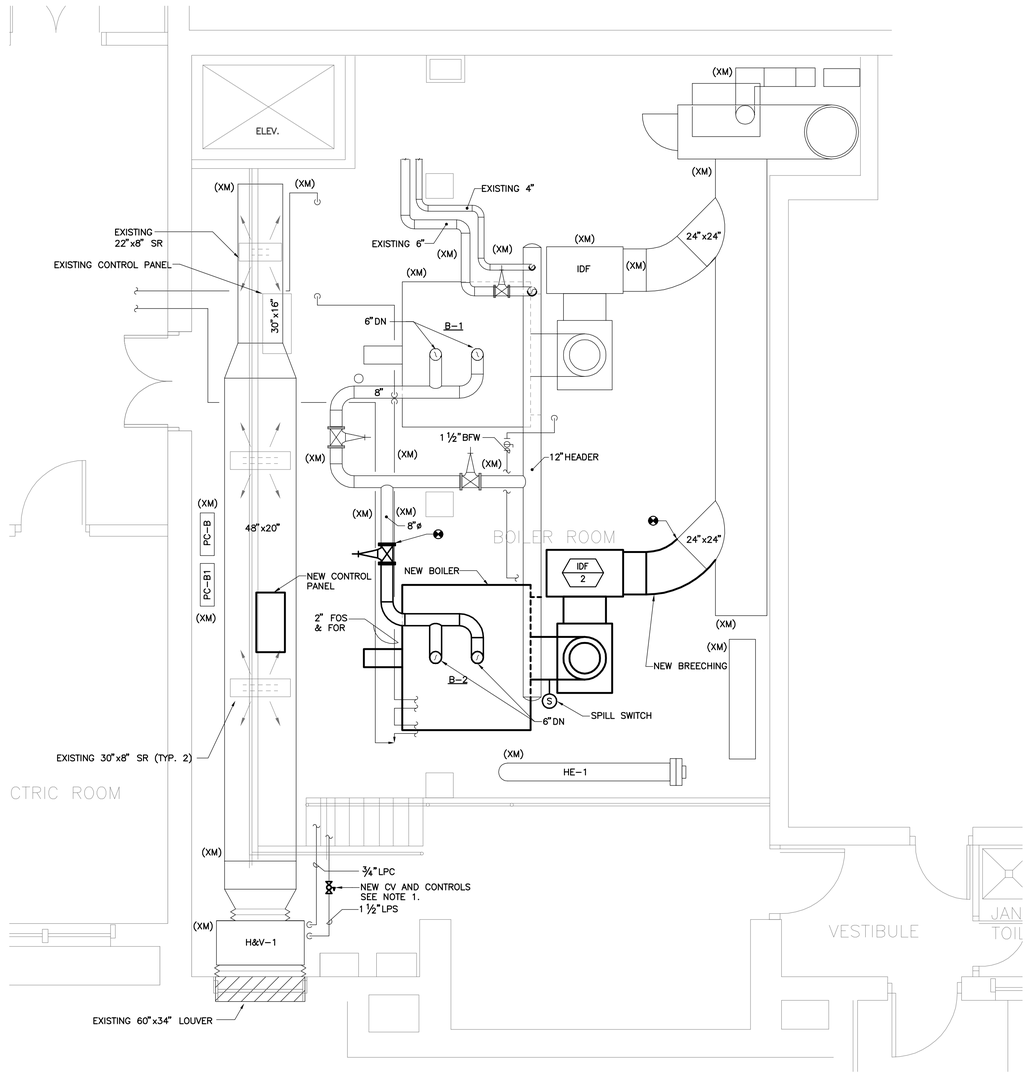
1/4" = 1' - 0"
0 4' 8'

MD2.01



MECHANICAL - BOWEN LOWER BOILER ROOM
NEW WORK PART PLAN

SCALE: 1/4"=1'-0"



MECHANICAL - BOWEN UPPER BOILER ROOM
NEW WORK PART PLAN

SCALE: 1/4"=1'-0"

NOTES
1. PROVIDE NEW STEAM CONTROL VALVE AND CONTROLS TO MODULATE TO MAINTAIN 60 DEGREES(F) LAT FROM EXISTING H&V-1.

100% CONTRUCTION DOCUMENTS
09-02-2011

1/4" = 1' - 0"
0 4' 8'

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KEYPLAN

REVISIONS

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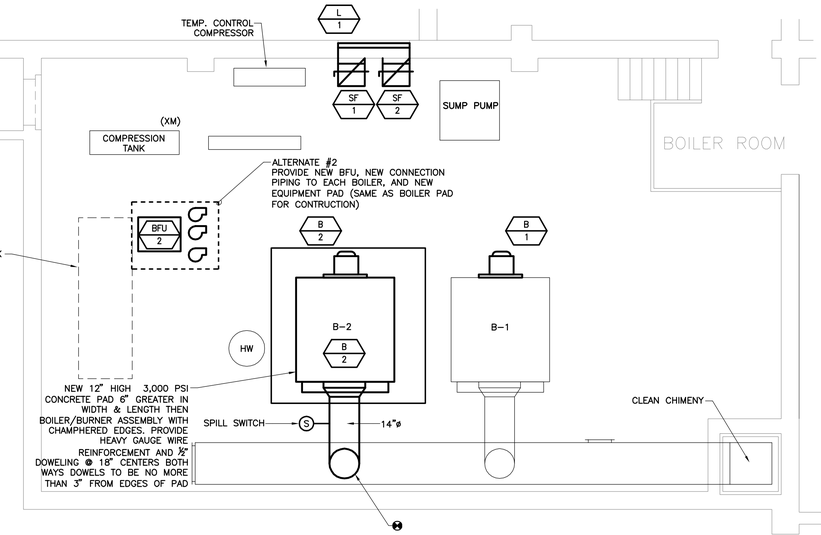
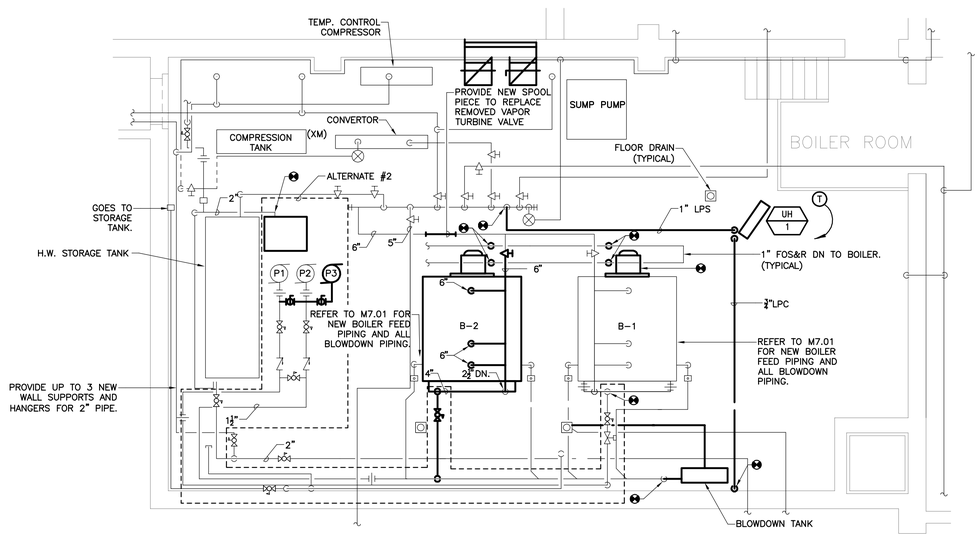
NEW WORK
PART PLANS

M2.00



MECHANICAL - COUNTRYSIDE BOILER ROOM BREECHING
NEW WORK PART PLAN

SCALE: 1/4"=1'-0"



MECHANICAL - COUNTRYSIDE BOILER ROOM PIPING
NEW WORK PART PLAN

SCALE: 1/4"=1'-0"


KEYPLAN

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BOILER ROOM
NEW WORK
PART PLAN

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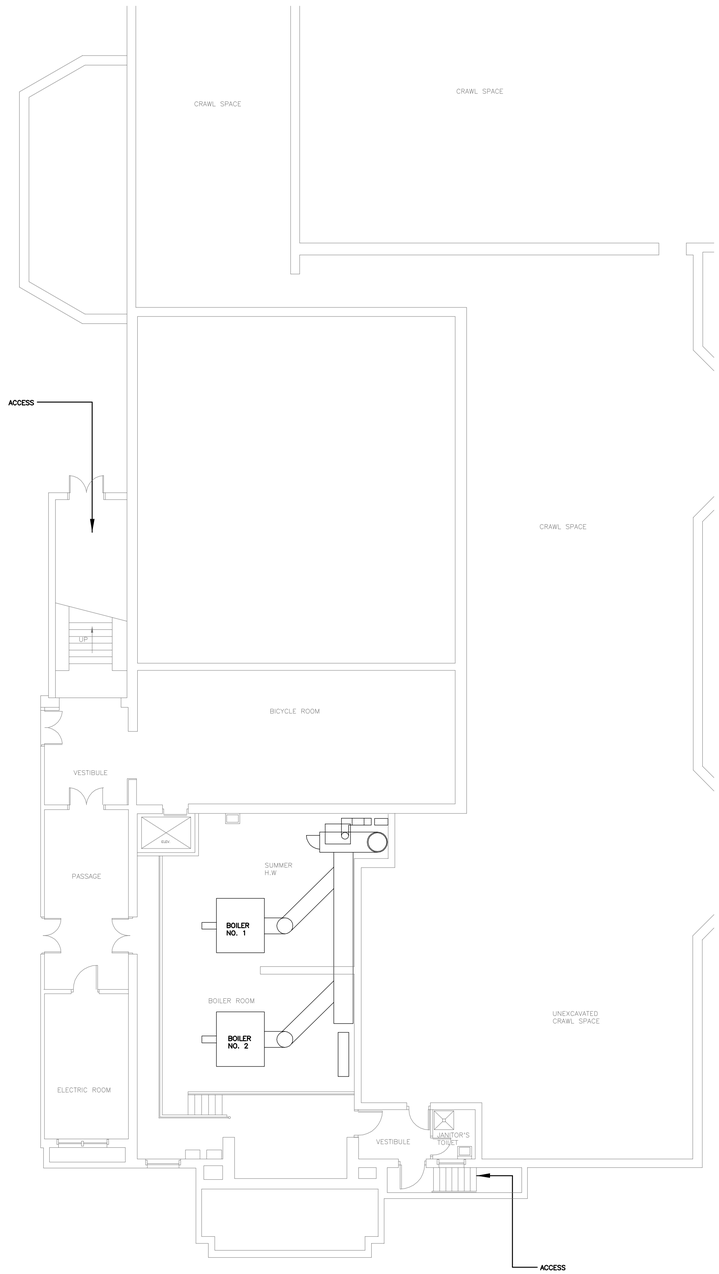
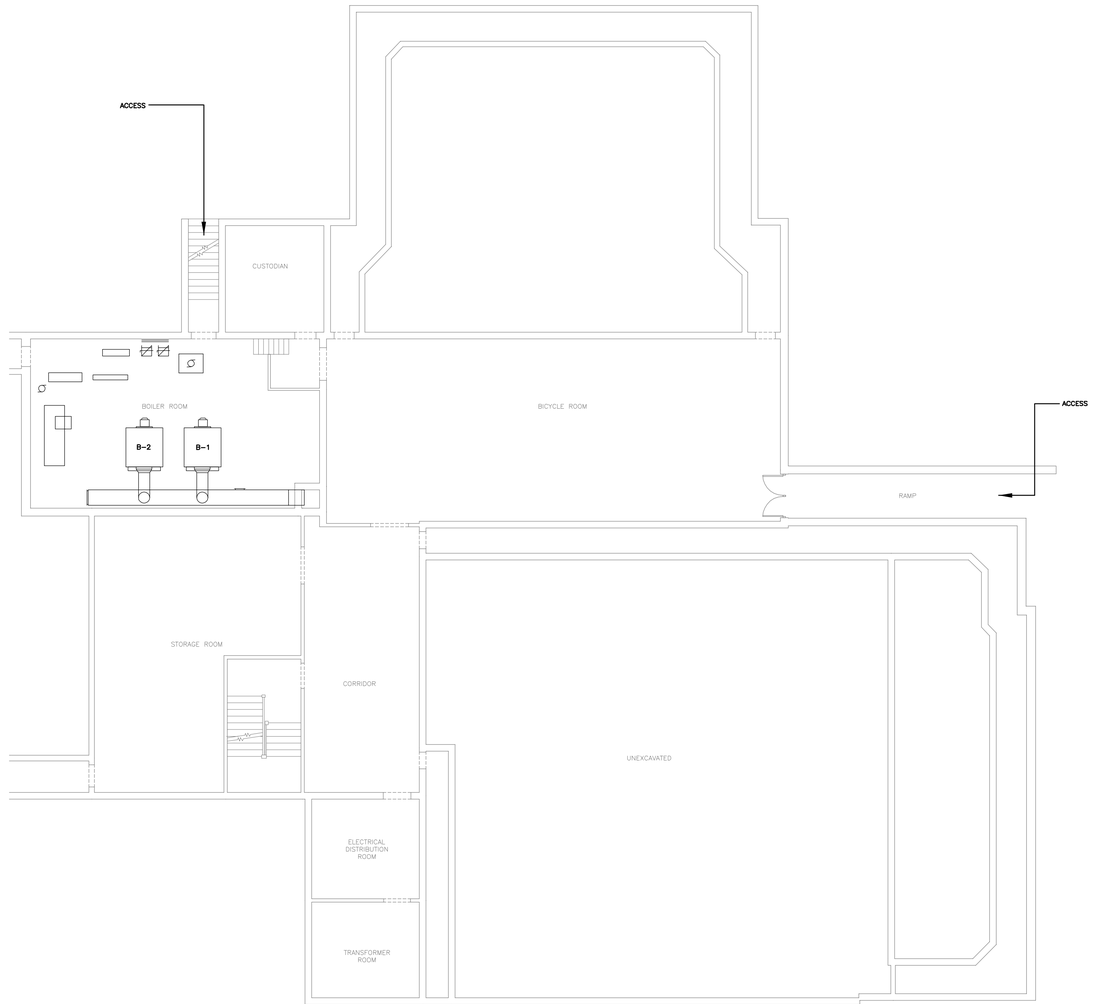
09-02-2011

1/4" = 1' - 0"
0 4' 8'

M2.01



MECHANICAL - BOWEN BOILER ROOM
ACCESS PLAN
SCALE: 3/32"=1'-0"



MECHANICAL - COUNTRYSIDE BOILER ROOM
ACCESS PLAN
SCALE: 3/32"=1'-0"

100% CONTRUCTION DOCUMENTS
09-02-2011

1/8" = 1' - 0"
0 8' 16'

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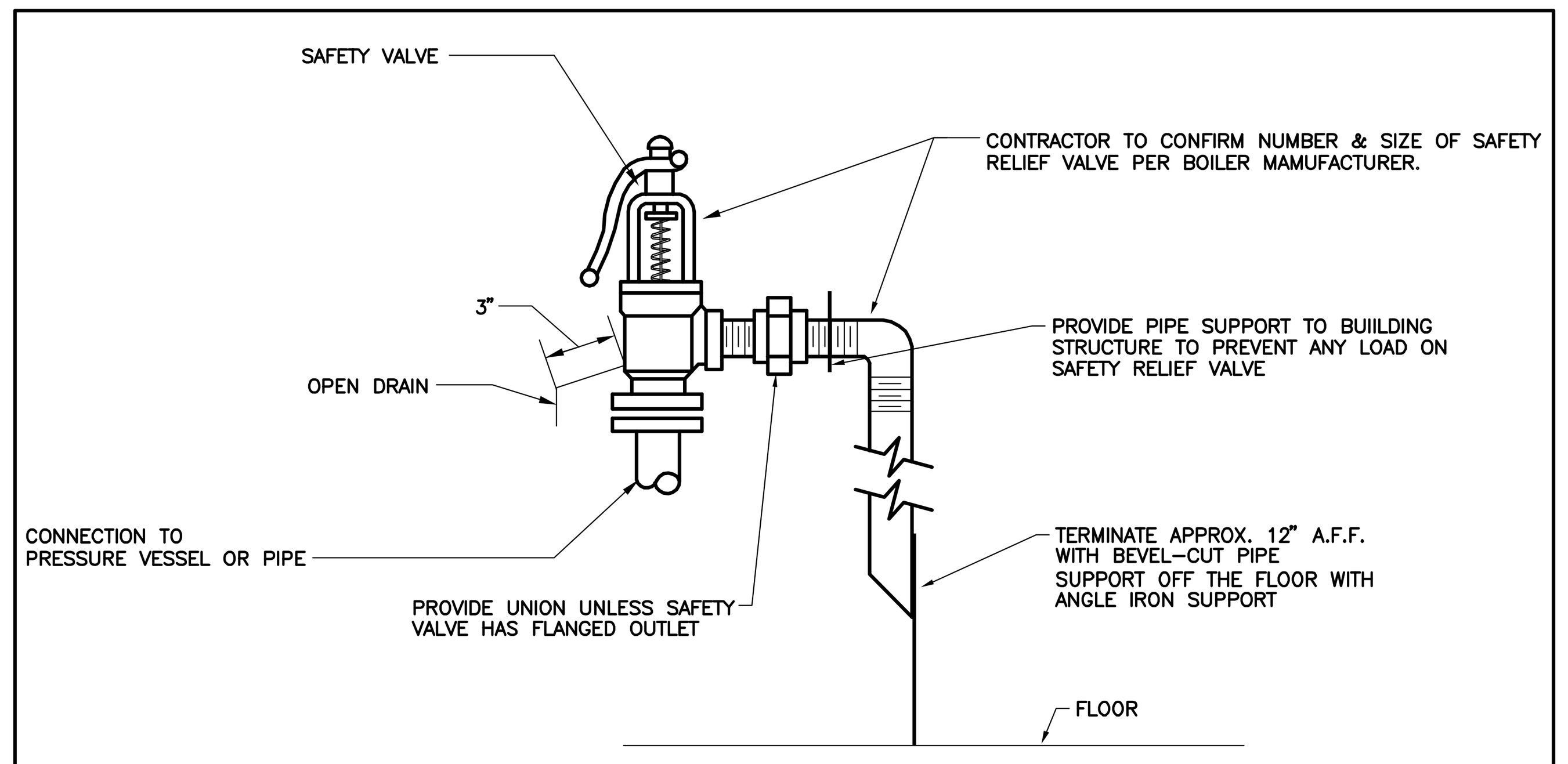
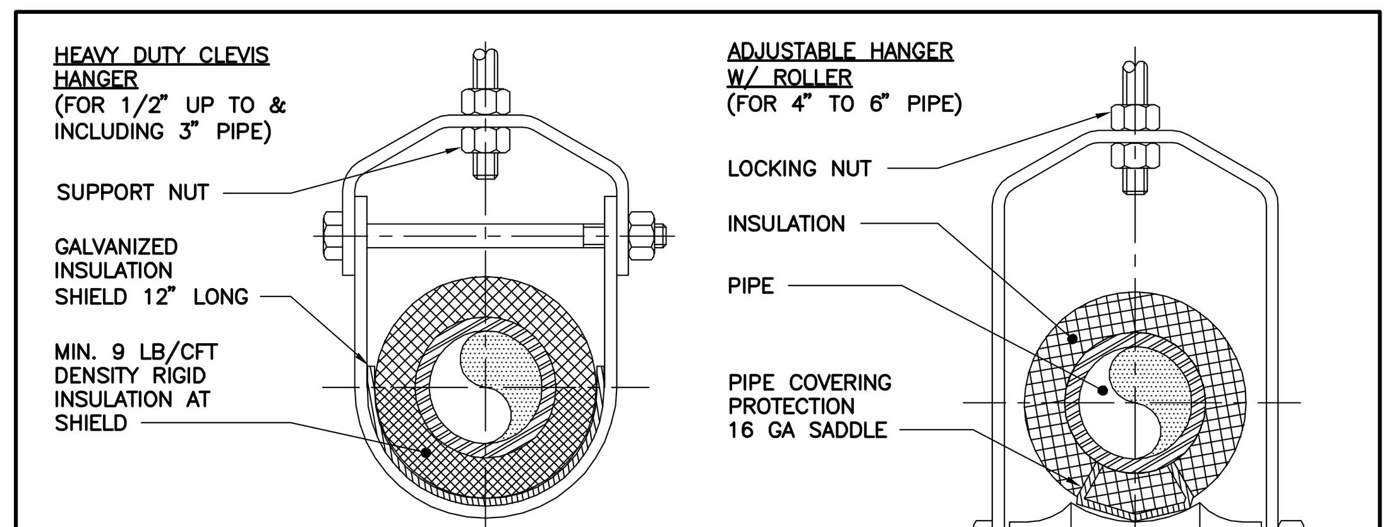
SCALE AS NOTED

MECHANICAL
BOILER ROOM
ACCESS PLAN

M4.00

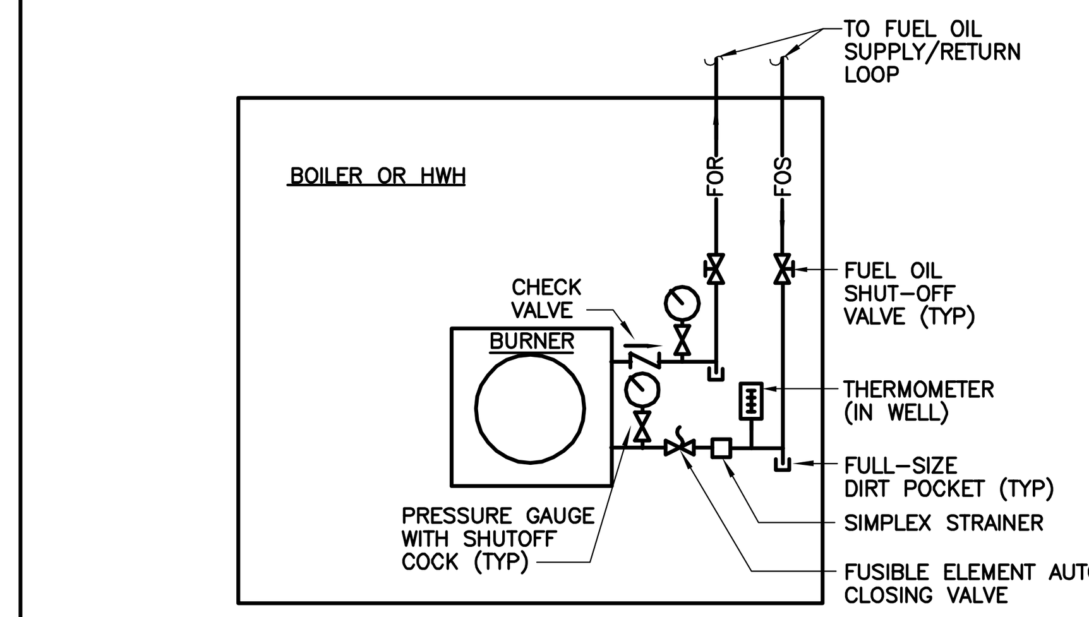


TYPICAL - STEAM SAFETY VALVE DETAIL | -

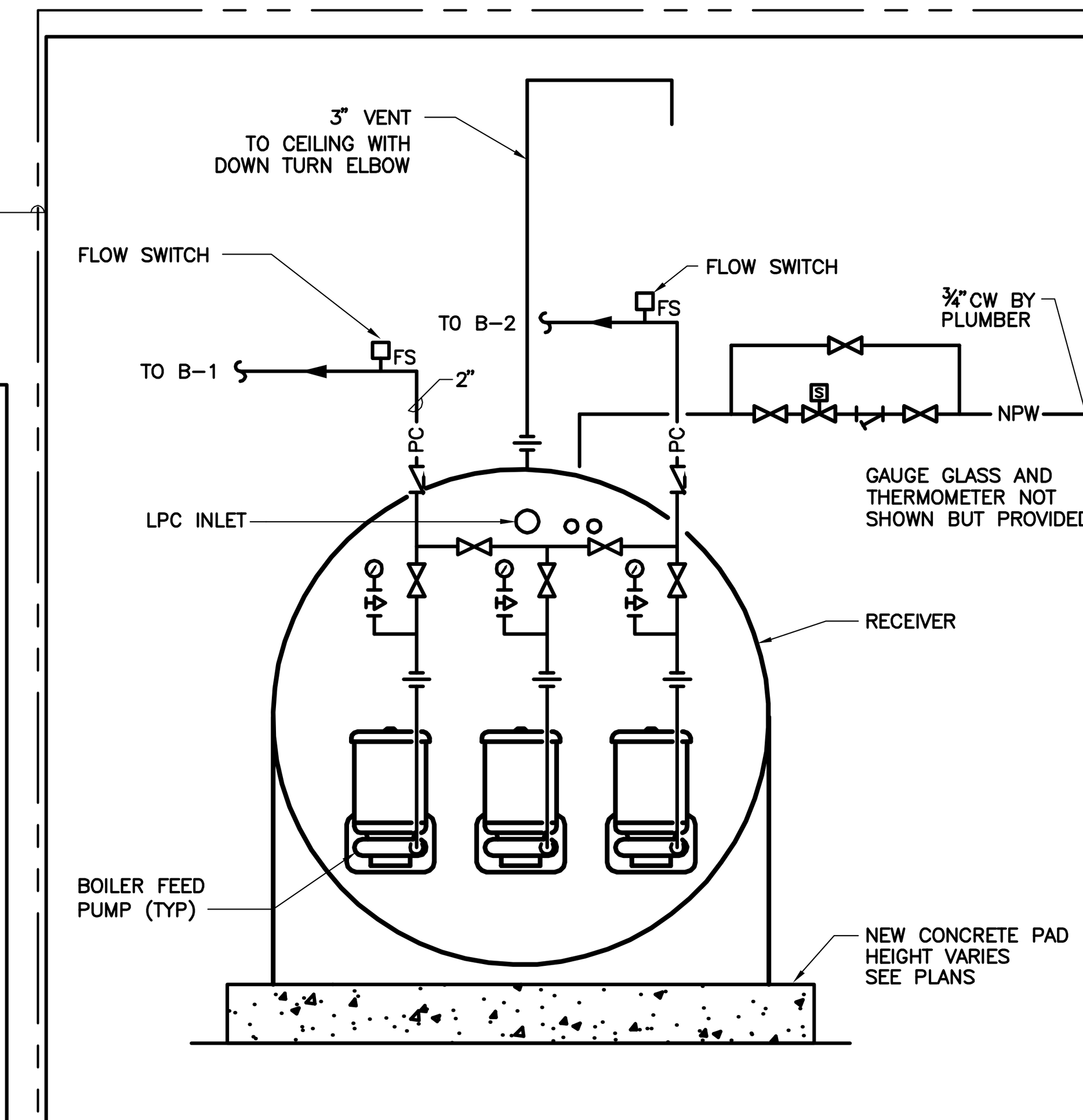


NOTES:
1. SEE SPECIFICATION FOR HANGER SIZES.
2. PIPES 8" AND LARGER SHALL BE ROLLER SUPPORTED W/ DUAL RODS.
3. FOR CHW SERVICE OVER 3", REPLACE SADDLE W/ 12" LONG, 14 GAUGE SHIELD W/ RIGID INSULATION BETWEEN THE PIPE AND SHIELD.

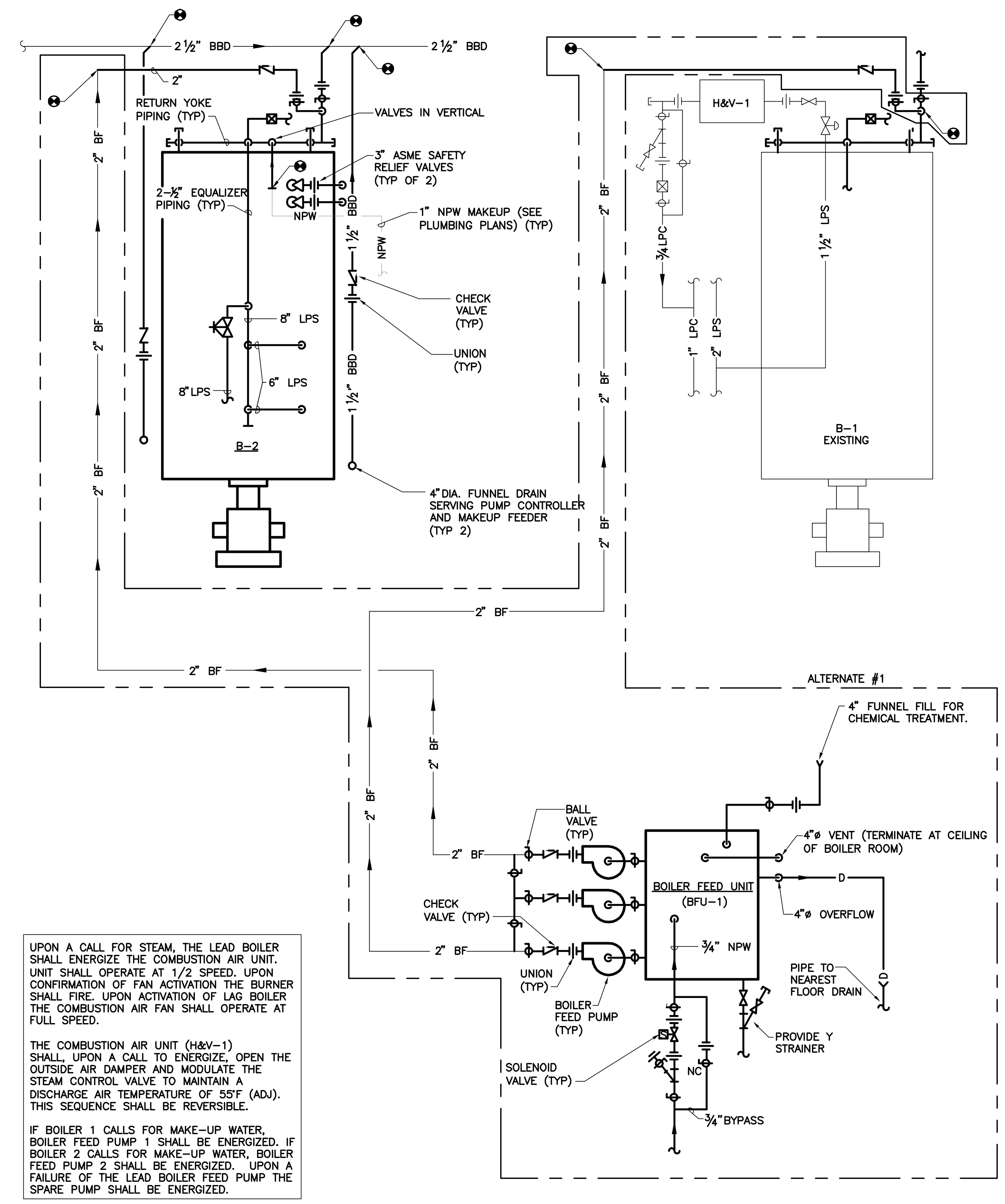
TYPICAL - PIPE HANGER SUPPORT | HAS001



TYPICAL - FUEL OIL PIPING AT BURNER | ---



ALTERNATE 1 & 2
BOILER FEED UNIT PIPING | HB007

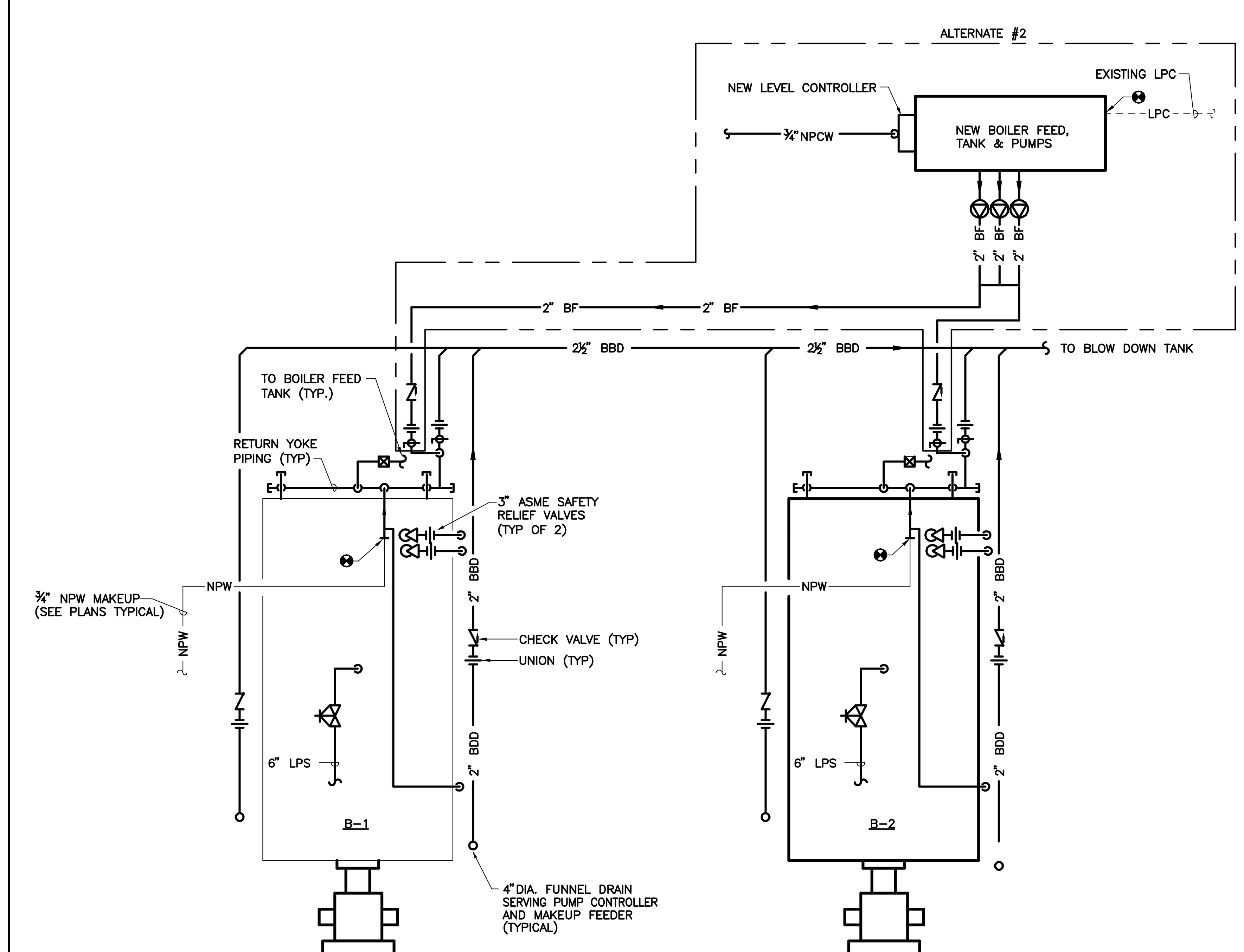


UPON A CALL FOR STEAM, THE LEAD BOILER SHALL ENERGIZE THE COMBUSTION AIR UNIT. UNIT SHALL OPERATE AT 1/2 SPEED. UPON CONFIRMATION OF FAN ACTIVATION THE BURNER SHALL FIRE. UPON ACTIVATION OF LAG BOILER THE COMBUSTION AIR FAN SHALL OPERATE AT FULL SPEED.

THE COMBUSTION AIR UNIT (H&V-1) SHALL, UPON A CALL TO ENERGIZE, OPEN THE OUTSIDE AIR DAMPER AND MODULATE THE STEAM CONTROL VALVE TO MAINTAIN A DISCHARGE AIR TEMPERATURE OF 55°F (ADJ). THIS SEQUENCE SHALL BE REVERSIBLE.

IF BOILER 1 CALLS FOR MAKE-UP WATER, BOILER FEED PUMP 1 SHALL BE ENERGIZED. IF BOILER 2 CALLS FOR MAKE-UP WATER, BOILER FEED PUMP 2 SHALL BE ENERGIZED. UPON A FAILURE OF THE LEAD BOILER FEED PUMP THE SPARE PUMP SHALL BE ENERGIZED.

BOWEN - STEAM SYSTEM SCHEMATIC
& CONTROLS NARRATIVE | -



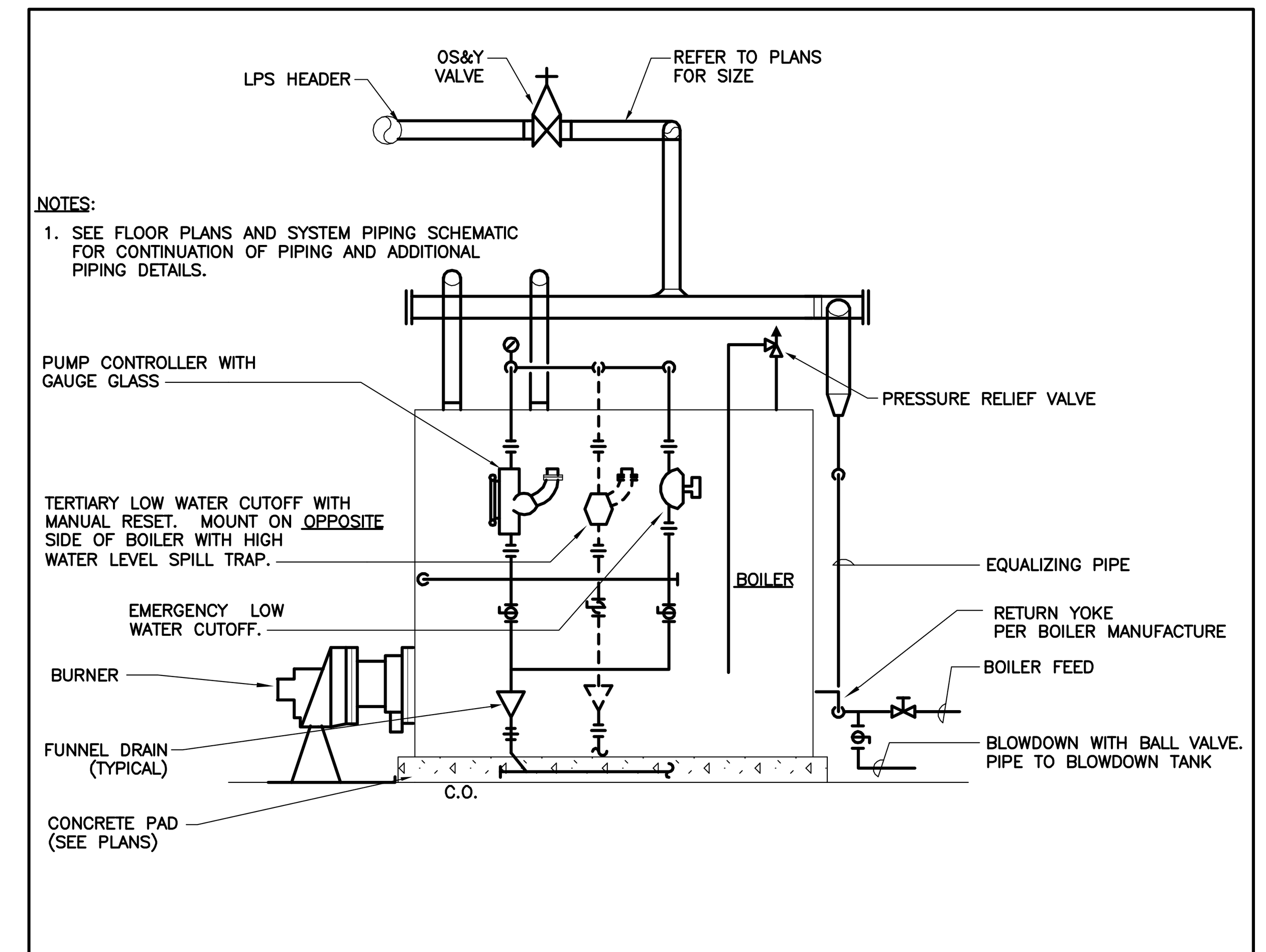
UPON A CALL FOR STEAM, THE LEAD BOILER SHALL ENERGIZE THE COMBUSTION AIR UNIT. ONE FAN SHALL OPERATE. UPON CONFIRMATION OF FAN ACTIVATION THE BURNER SHALL FIRE. UPON ACTIVATION OF LAG BOILER THE SECOND COMBUSTION AIR FAN SHALL OPERATE & BURNER SHALL FIRE.

THE COMBUSTION AIR UNIT(S) {SF-1 & SF-2} SHALL, UPON A CALL TO ENERGIZE, OPEN THE OUTSIDE AIR DAMPER AND ENERGIZE THE STEAM. THIS SEQUENCE SHALL BE REVERSIBLE.

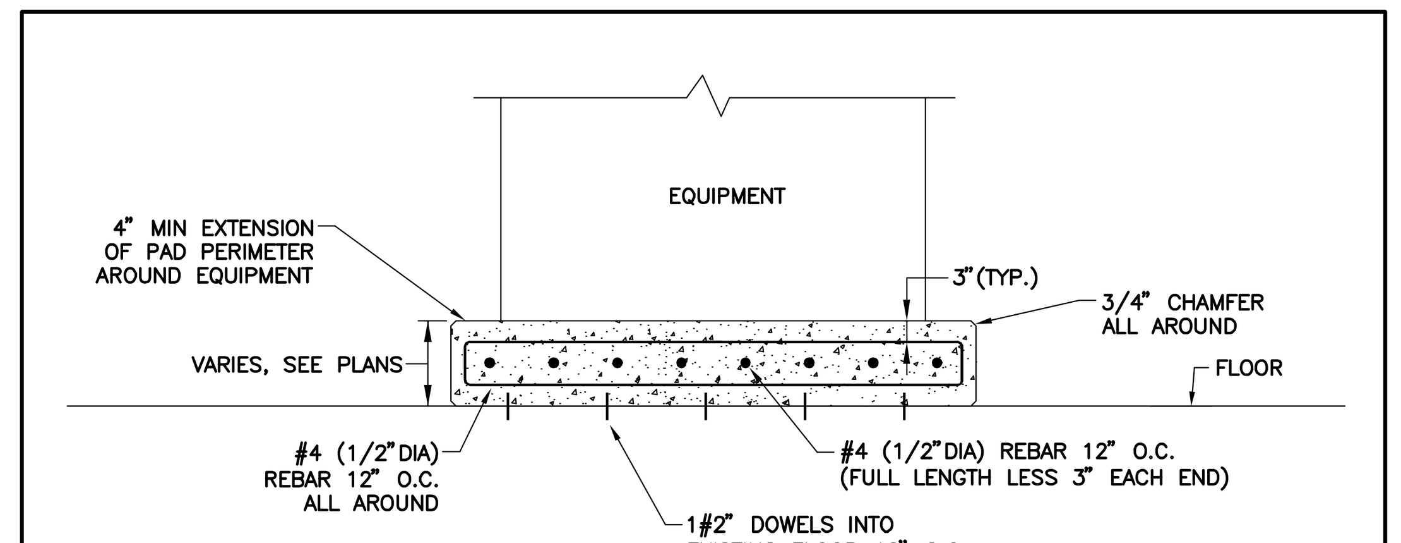
IF BOILER 1 CALLS FOR WATER, AND ASSOCIATED BOILER FEED PUMP 1 SHALL BE ENERGIZED. IF BOILER 2 CALLS FOR WATER, BOILER FEED PUMP 2 SHALL BE ENERGIZED.

UPON A CALL FOR HEAT IN THE BOILER ROOM AS SENSED BY A LINE VOLTAGE THERMOSTAT, THE UH-1 CONTROL VALVE SHALL OPEN. WHEN THE AQUASTAT SENSED 150°F UH-1 FAN SHALL START. THIS SEQUENCE IS REVISABLE.

COUNTRYSIDE - STEAM SYSTEM SCHEMATIC
& CONTROLS NARRATIVE | R



TYPICAL - BOILER PIPING SCHEMATIC | -



NOTES:
1. REFER TO EXACT INSTALLATION REQUIREMENTS OF THE EQUIPMENT AND ASSOCIATED EQUIPMENT MANUFACTURER FOR MODIFICATIONS THAT MAY BE REQUIRED TO THIS PAD LAYOUT. THIS DETAIL IS INTENDED TO ILLUSTRATE GENERAL REQUIREMENTS.

CONCRETE PAD DETAIL
(HEAVY EQUIPMENT) | HAS011

100% CONTRUCTION DOCUMENTS
09-02-2011

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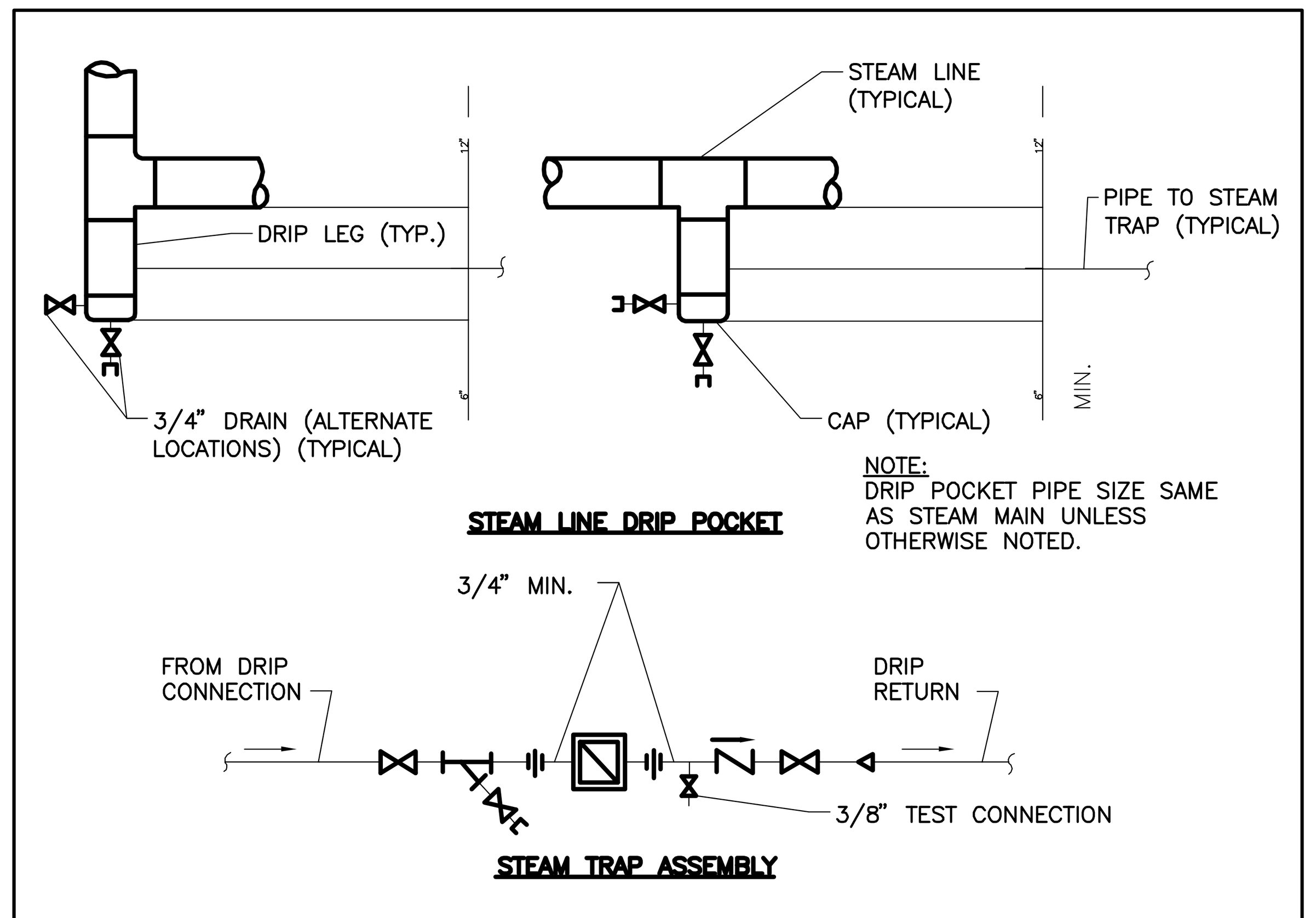
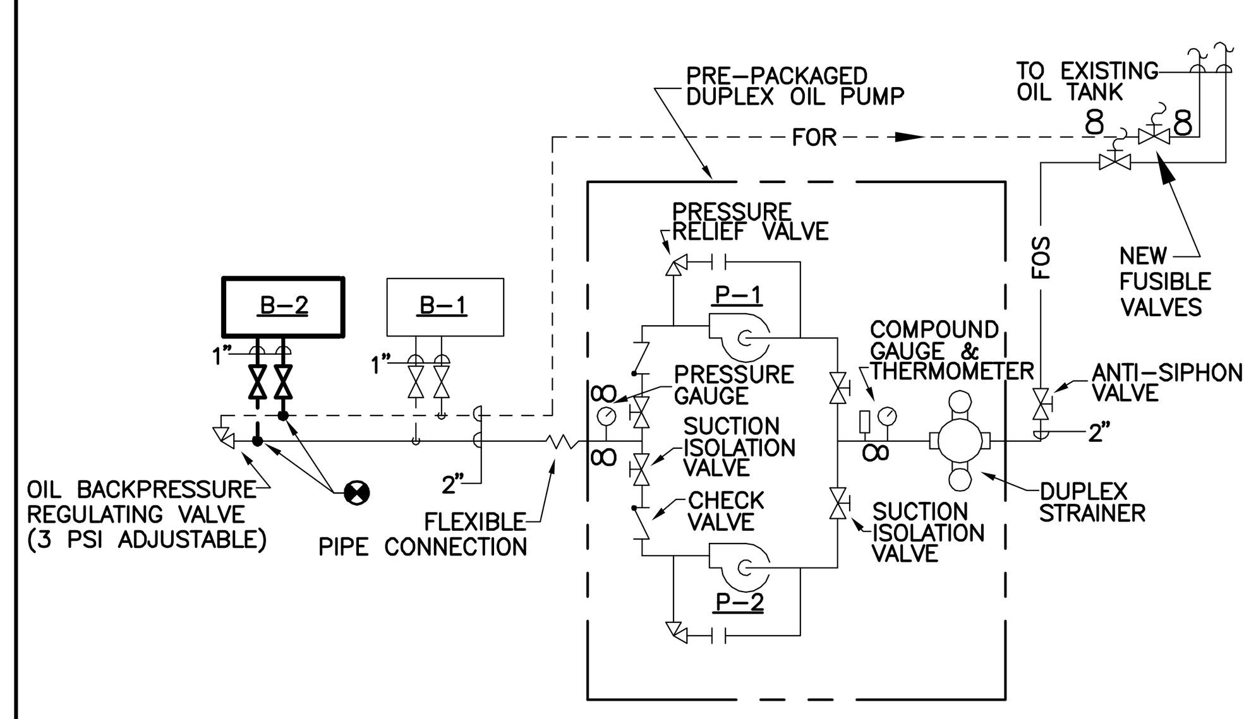
MECHANICAL
BOILER ROOM
PIPING SCHEMATIC
DETAILS AND CONTROLS

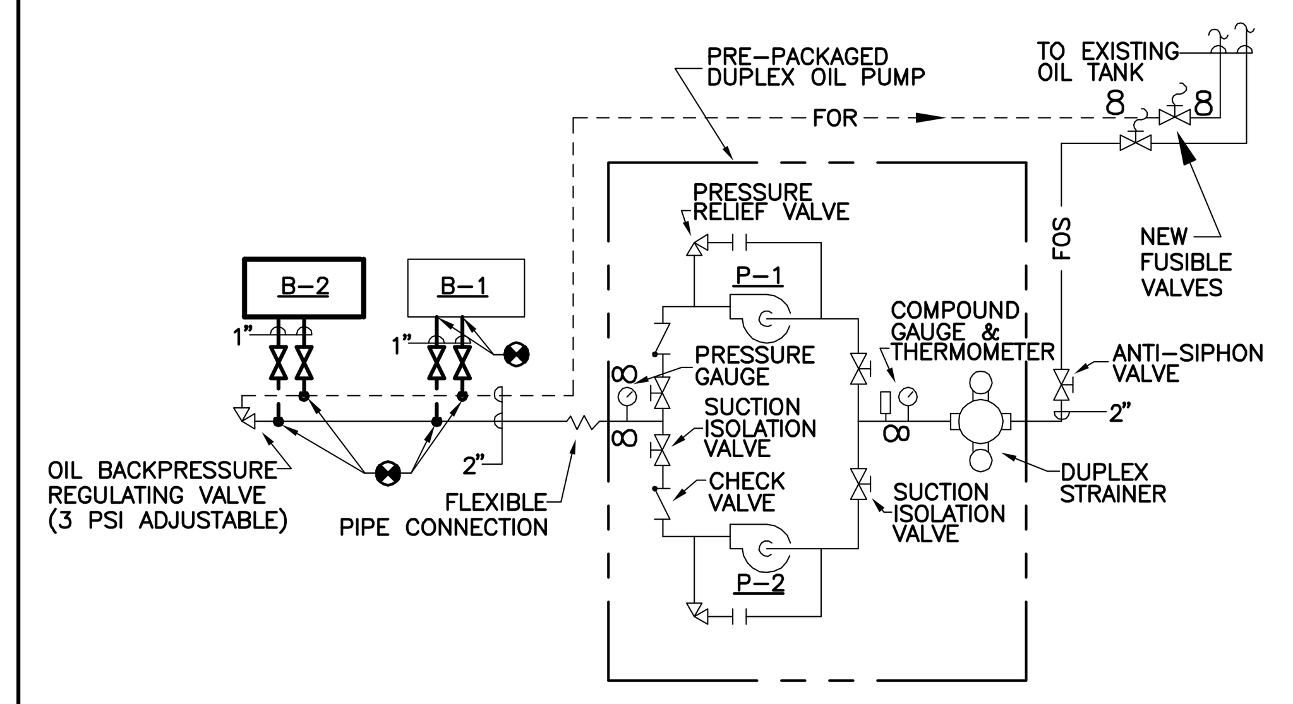
M7.00



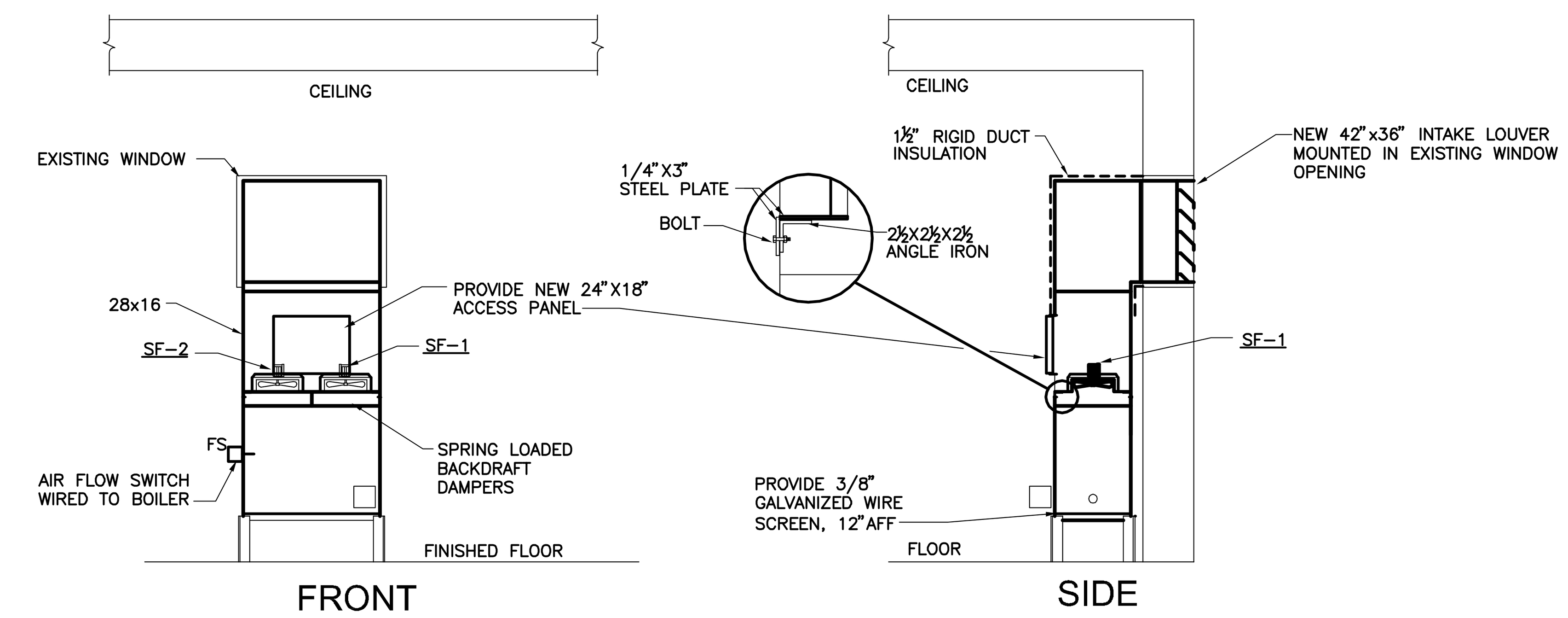
RDK TYPICAL - STEAM TRAP ASSEMBLY | HPS0012



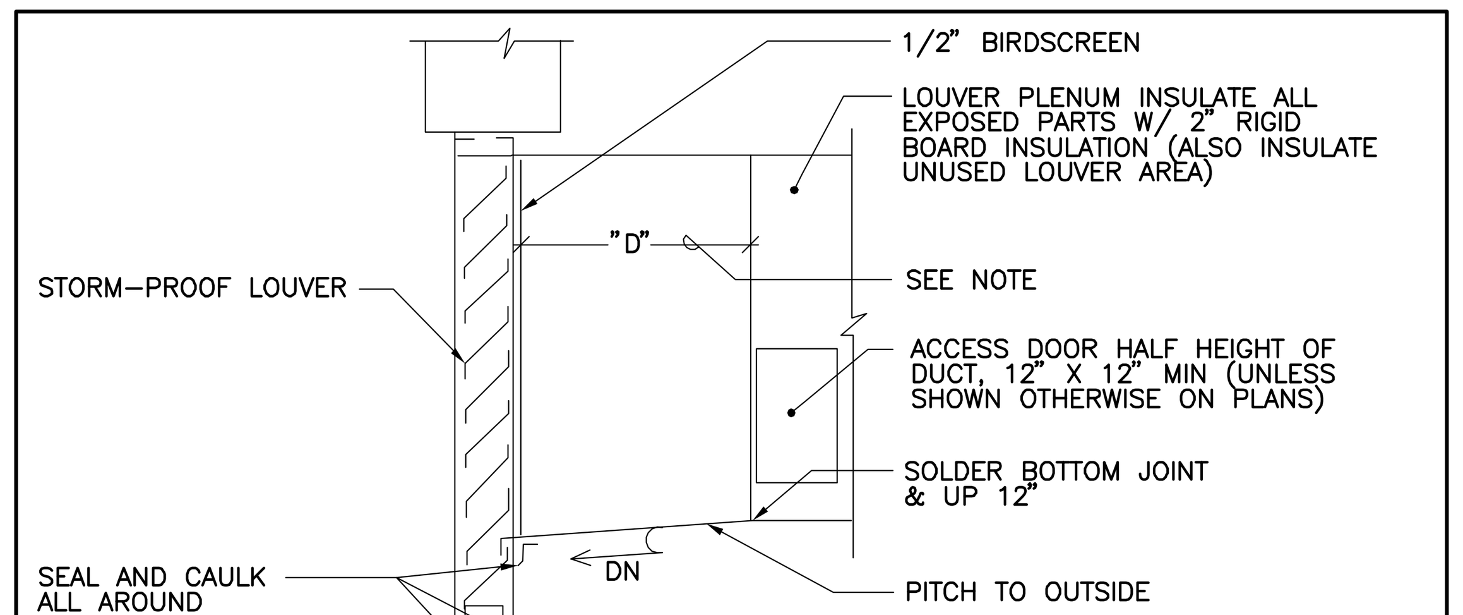
RDK BOWEN-FUEL OIL PIPING SCHEMATIC | –



RDK COUNTRYSIDE-FUEL OIL PIPING SCHEMATIC | –

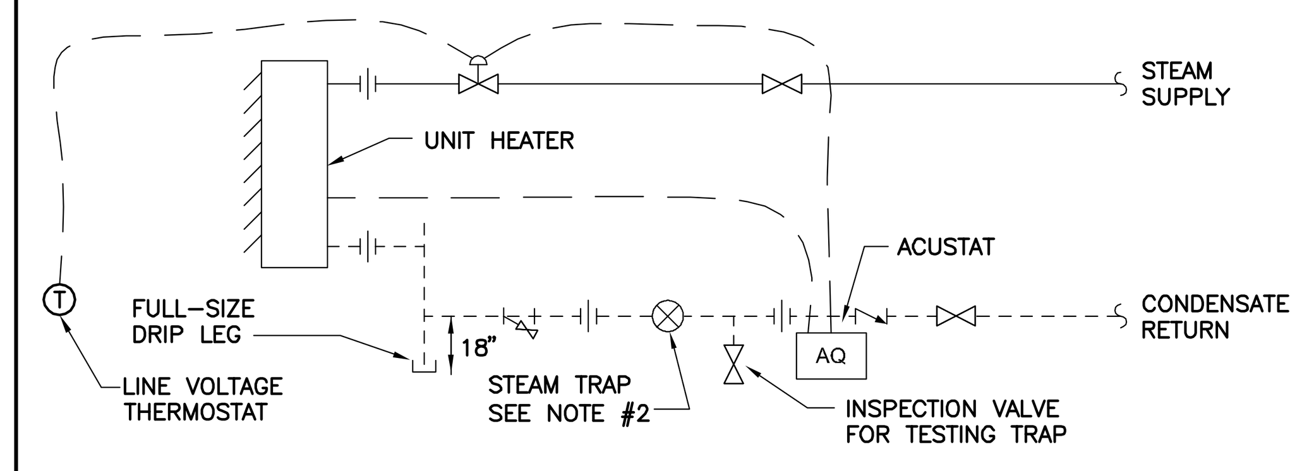


RDK COUNTRYSIDE - COMBUSTION AIR FAN DETAIL (REFERENCE) | NTS



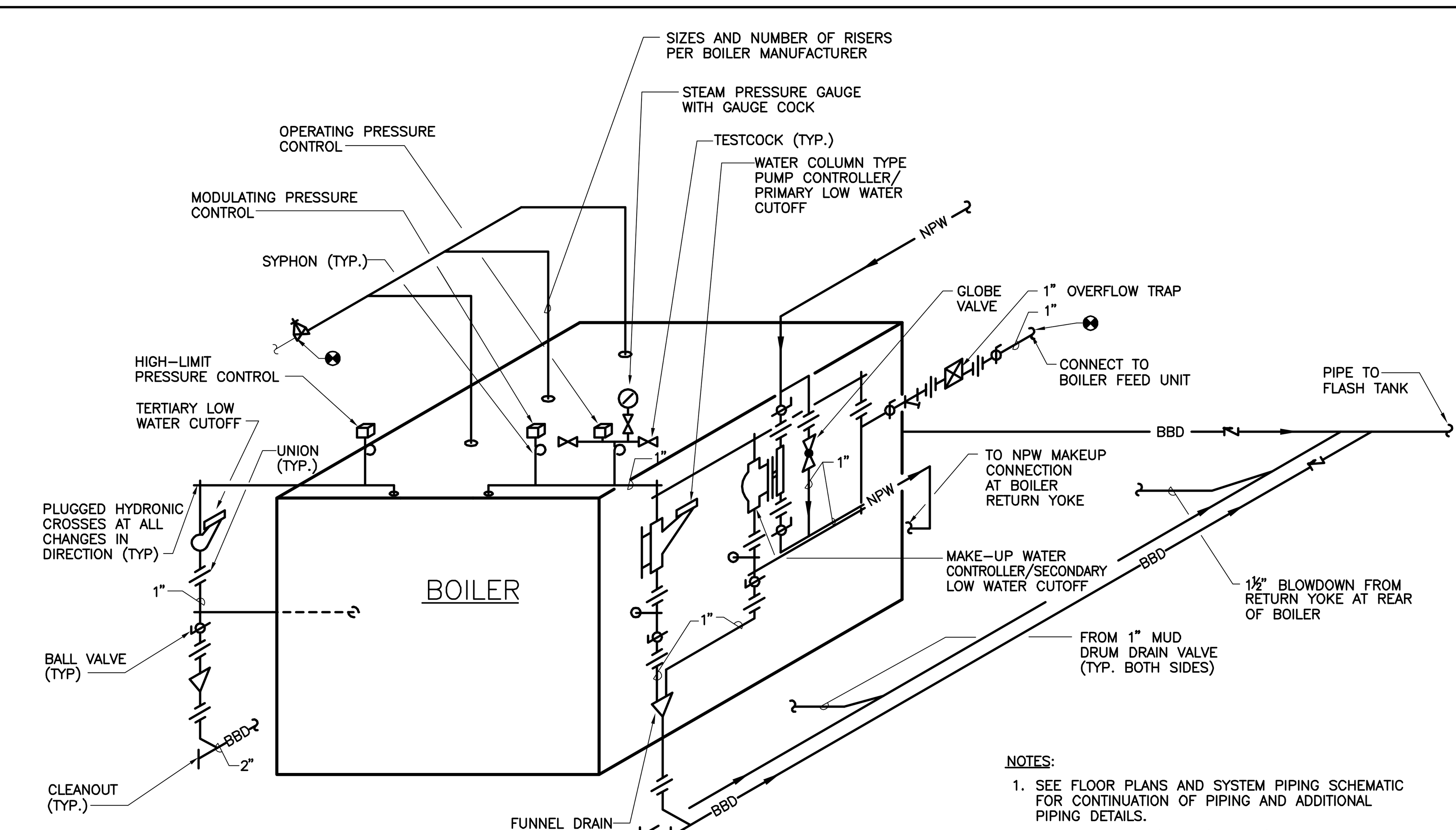
NOTE:
WHEN "D" IS OVER 24" PROVIDE 3/4" DRAIN AT 5'-0" CENTERS (IF DEPTH INTO PAPER IS GREATER THAN 5'-0"), 6" FROM LOUVER WITH TRAP.

RDK COUNTRYSIDE - LOUVER CONNECTION | HSM019



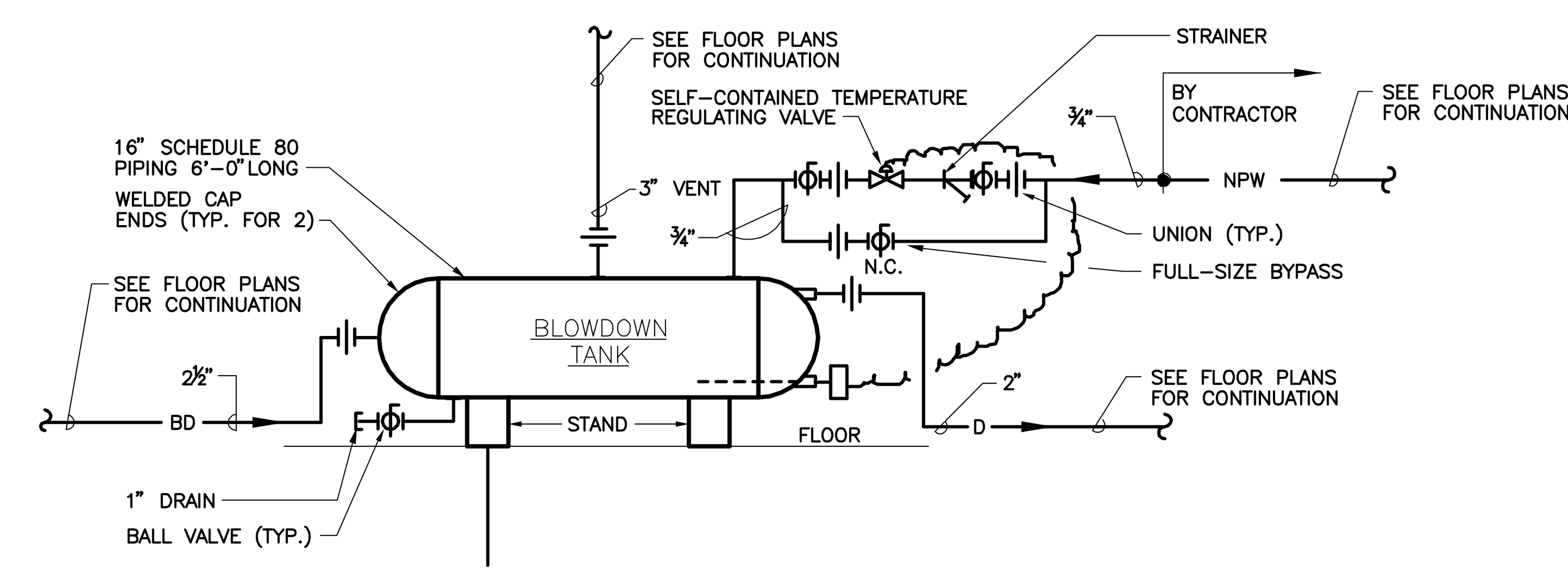
NOTES:
1. HORIZONTAL DISCHARGE SHOWN; CONNECTIONS FOR VERTICAL DISCHARGE ARE SIMILAR.
2. TRAP SHALL BE FLOAT-AND-THERMOSTATIC TYPE.

RDK COUNTRYSIDE - STEAM UNIT HEATER | HC017

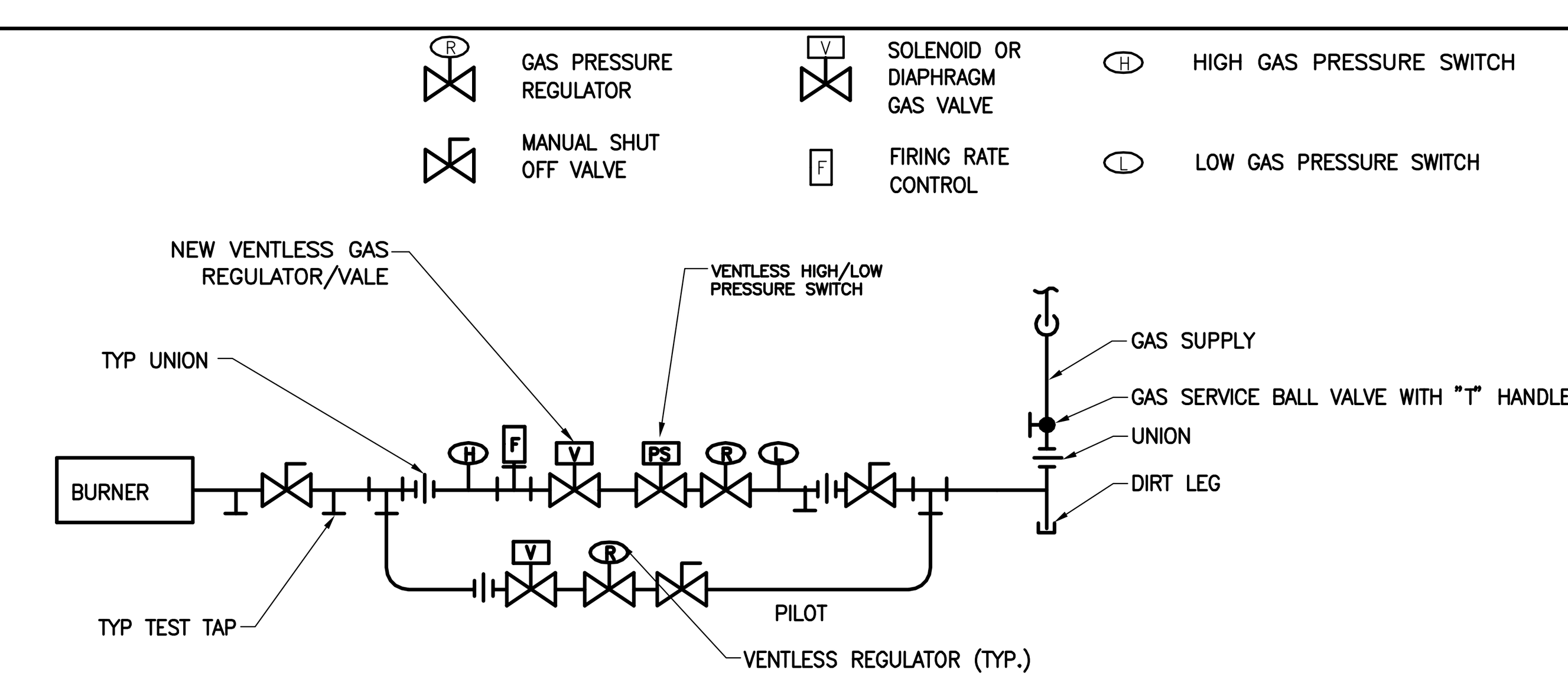


NOTES:
1. SEE FLOOR PLANS AND SYSTEM PIPING SCHEMATIC FOR CONTINUATION OF PIPING AND ADDITIONAL PIPING DETAILS.
2. PROVIDE NIPPLE/VALVE/NIPPLE/CAP AT MUD DRUM ENDS AS SPECIFIED.

RDK TYPICAL - BOILER BLOW DOWN PIPING DETAILS | R



RDK COUNTRYSIDE - BOILER BLOW DOWN TANK | R



NOTE
1. BOILER GAS TRAINS SHALL BE SUPPLIED BY EQUIPMENT MANUFACTURER AND INSTALLED BY MECHANICAL CONTRACTOR.
2. COORDINATE WITH THE BOILER MANUFACTURER FOR EXACT GAS TRAIN CONFIGURATIONS.

RDK COUNTRYSIDE - BOILER GAS TRAIN DETAIL | NTS

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PIPING SCHEMATIC
DETAILS AND CONTROLS

M7.01

J:\2011\20110321 – Newton Bowen-Countryside School Boiler\Hvac\Plot Sheets\20110321 M7.01 MECHANICAL BOILER ROOM PIPING SCHEMATIC AND DETAILS.dwg [Layout1] September 22, 2011 – 2:53pm mtetrault

COUNTRYSIDE - UNIT HEATER SCHEDULE (STEAM)

TAG	LOCATION	TYPE	OUTPUT MBH	AIR CFM	AIR EAT (°F)	AIR LAT (°F)	MOTOR RPM	MOTOR BHP	MOTOR HP	ELECTRIC SERVICE HZ	ELECTRIC SERVICE V	ELECTRIC SERVICE PH	MANUFACTURER AND MODEL NUMBER (AS STANDARD)	REMARKS
UH-1	BOILER ROOM	STEAM	86	500	60	115	1050	–	1/10	60	115	1	RITTLING RH-86	–

NOTES:
1. PROVIDE WITH LINE VOLTAGE THERMOSTAT, CONTROL VALVE, ACUASTAT

COUNTRYSIDE - FAN SCHEDULE

TAG	SERVICE	LOCATION	CFM	FAN TYPE	E.S.P. (IN.WG)	WHEEL DIA. (IN.)	WHEEL TYPE	WHEEL DRIVE	OUTLET VELOCITY (FPM)	MOTOR RPM	MOTOR BHP	MOTOR HP	MOTOR V	MOTOR PH	MANUFACTURER AND MODEL NUMBER (AS STANDARD)	REMARKS
SF-1	COMB. AIR	BOILER ROOM	950	PROPELLER	0.25	16"	PROP.	DIRECT	293	1140	0.15	1/6	115	1	COOK SWD – 16A11DA	1
SF-2	COMB. AIR	BOILER ROOM	950	PROPELLER	0.25	16"	PROP.	DIRECT	293	1140	0.15	1/6	115	1	COOK SWD – 16A11DA	2

NOTES:

1. INTERLOCK WITH BOILER NO. 1
2. INTERLOCK WITH BOILER NO. 2

COUNTRYSIDE - AIR LOUVER SCHEDULE

DESIGNATION	AREA SERVED	MANUFACTURER & PART NO.	LOUVER DEPTH	EXISTING OPENING SIZE	MINIMUM FREE AREA	FREE AREA PROVIDED	MAXIMUM VELOCITY	MAXIMUM PRESSURE DROP (IN INCHES W.G.)	REMARKS
L-1	BOILER ROOM COMBUSTION AIR INTAKE	RUSKIN-ELF375X STATIONARY LOUVER	4"	42"X36"	–	–	500 FPM	0.07	PROVIDE W/ BAKED ENAMEL FINISH MATCH BUILDING COLOR; COORDINATE W/OWNER AND INSECT SCREEN

COUNTRYSIDE - BOILER SCHEDULE

TAG	LOCATION	OUTPUT CAPACITY (GROSS I=B=R) MBH	OUTPUT CAPACITY (GROSS I=B=R) HP	OUTPUT STEAM (LB./HR)	STEAM PSIG	BREECHING °F	BREECHING CFM	FIRING RATE OIL GPH	FUEL INLET PRESSURE GAS/OIL (IN.WG)/(PSIG)	BURNER TYPE	BURNER TURN MODEL	BURNER BLOWER HP	BURNER BLOWER V	BURNER BLOWER PH	MANUFACTURER AND MODEL NUMBER (AS STANDARD)	REMARKS
B-1	BOILER ROOM	2232	67	2312	15	–	2,400	22	3.5	GAS/OIL	POWERFLAME	1-1/2	208	3	H.B. SMITH – 28A-S-9	EXISTING TO REMAIN
B-2	BOILER ROOM	2232	67	2312	15	–	2,400	22	3.5	GAS/OIL	POWERFLAME	1-1/2	208	3	H.B. SMITH – 28A-S-9	NEW

NOTES:

1. PROVIDE WITH MODULATING BURNER
2. PROVIDE WITH SINGLE POINT POWER CONNECTION
3. GAS TRAIN SHALL BE SIZED FOR 4"W.C. GAS PRESSURE INLET

BOWEN – BOILER SCHEDULE (STEAM)

TAG	LOCATION	OUTPUT CAPACITY (GROSS I=B=R) MBH	OUTPUT CAPACITY (GROSS I=B=R) HP	OUTPUT STEAM (LB./HR)	STEAM PSIG	BREECHING °F	BREECHING CFM	FIRING RATE OIL (GPH)	FUEL INLET PRESSURE OIL (PSIG)	BURNER TYPE	BURNER TURN MODEL	BURNER BLOWER HP	BURNER BLOWER V	BURNER BLOWER PH	INDUCED DRAFT FAN CFM	INDUCED DRAFT FAN TYPE	INDUCED DRAFT FAN HP	INDUCED DRAFT FAN VOLTS	INDUCED DRAFT FAN PH	MANUFACTURER AND MODEL NUMBER (AS STANDARD)	REMARKS
B-1	BOILER ROOM	3,853	115	4,313	15	–	2,400	38	25	OIL	T.C. DL-54	3	208	3	2,400	AUBURN #16B75	1	208	3	H.B. SMITH – MILLS 4500A-S-12 SECTION	EXISTING
B-2	BOILER ROOM	3,853	115	4,313	15	–	2,400	38	25	OIL	T.C. DL-54	3	208	3	2,400	AUBURN #16B75	1	208	3	H.B. SMITH – MILLS 4500A-S-12 SECTION	NEW

NOTES:

1. PROVIDE WITH MODULATING BURNER
2. PROVIDE WITH DRAFT CONTROL SYSTEM
3. PROVIDE WITH REMOTE CONTROL PANEL AND SINGLE POINT POWER CONNECTION

COUNTRYSIDE – DUAL BURNER

LOCATION	TAG	LOCATION	OUTPUT CAPACITY (GROSS 1=B=R) MBH	OUTPUT CAPACITY (GROSS 1=B=R) HP	FIRING RATE GAS (CFH)	FIRING RATE OIL (GPH)	FUEL INLET PRESSURE GAS (IN.WG)	FUEL INLET PRESSURE OIL (PSIG)	BURNER TYPE MAKE/MODEL	BURNER TURN DOWN	BURNER BLOWER HP	BURNER BLOWER V	BURNER BLOWER PH	MANUFACTURER AND MODEL NUMBER (AS STANDARD)	REMARKS
BOILER ROOM	B-1	BOILER ROOM	3172	67	2836	22	3.5	25	POWER FLAME C2-GO-2031	MODULATING	1-1/2	208	3	H.B. SMITH – 28A-S-9	NEW
BOILER ROOM	B-2	BOILER ROOM	3172	67	2836	22	3.5	25	POWER FLAME C2-GO-2031	MODULATING	1-1/2	208	3	H.B. SMITH – 28A-S-9	NEW

NOTE:

1.

BOWEN – BOILER FEED UNIT SCHEDULE

ALTERNATE #1

TAG NO.	LOCATION	MANUFACTURER (AS STANDARD)	RECEIVER CAPACITY GALLONS (EDR)	CONDENSATE PUMP DATA QTY	GPM	RPM	PSIG	MOTOR HP	ELECTRICAL DATA VOLTS	PHASE	HZ	NPSH	REMARKS
BFU-1	MAIN BOILER ROOM	SKIDMORE MODEL VJSSM-153	110	3	17	3500	30.0	1	208	3	60	2.0	1. PROVIDE WITH UNIT MOUNTED CONTROL PANEL. 2. PROVIDE WITH MAKE-UP WATER ASSEMBLY.

COUNTRYSIDE – BOILER FEED UNIT SCHEDULE

ALTERNATE #2

TAG NO.	LOCATION	MANUFACTURER (AS STANDARD)	RECEIVER CAPACITY GALLONS (EDR)	CONDENSATE PUMP DATA QTY	GPM	RPM	PSIG	MOTOR HP	ELECTRICAL DATA VOLTS	PHASE	HZ	NPSH	REMARKS
BFU-2	MAIN BOILER ROOM	SKIDMORE MODEL VJSSM-153	110	3	12	3500	30.0	1/2	208	3	60	2.0	1. PROVIDE WITH UNIT MOUNTED CONTROL PANEL. 2. PROVIDE WITH MAKE-UP ASSEMBLY

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MECHANICAL SCHEDULES

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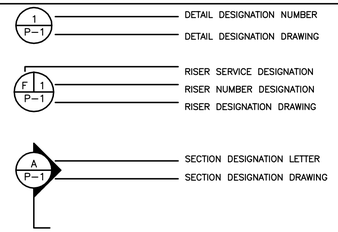
ABBREVIATIONS

ACT	ACOUSTICAL TILE
AFF	ABOVE FINISH FLOOR
AP	ACCESS PANEL
ARCH	ARCHITECT
BT	BATH TUB
BLDG	BUILDING
CFH	CUBIC FEET PER HOUR
CFM	CUBIC FEET PER MINUTE
CI	CAST IRON
CLG	CEILING
CLDI	CEMENT LINED DUCTILE IRON
CO	CLEANOUT
CONC	CONCRETE
CONT	CONTINUATION
CONTR	CONTRACTOR
CP	CHROME PLATED
CTE	CONNECT TO EXISTING
CW	COLD WATER
DCVA	DOUBLE CHECK VALVE ASSEMBLY
DF	DRINKING FOUNTAIN–FIXTURE IDENTIFICATION
DIA	DIAMETER
DN	DOWN
DWG	DRAWING
EC	ELECTRICAL CONTRACTOR
EL/ELEV	ELEVATION
EWC	ELECTRIC WATER COOLER–FIXTURE IDENTIFICATION
EX	EXISTING
FCO	FLOOR CLEANOUT
FFE	FINISH FLOOR ELEVATION
P–#	FIXTURE NUMBER
FLR	FLOOR
FP	FIRE PROTECTION
FS	FLOW SWITCH
FT	FOOT
FV	FLUSH VALVE
GALV	GALVANIZED
GC	GENERAL CONTRACTOR
GI	GREASE INTERCEPTOR
GPF	GALLON PER FLUSH
GPM	GALLONS PER MINUTE
HC	HANDICAPPED
HW	HOT WATER
HWR	HOT WATER RETURN
ID	INSIDE DIAMETER
INV	INVERT
IW	INDIRECT WASTE
LPC	LIMIT OF PLUMBING CONTRACTOR
MECH	MECHANICAL
MSB	MOP SERVICE BASIN–FIXTURE IDENTIFICATION
NC	NORMALLY CLOSED
NO	NORMALLY OPEN
NTS	NOT TO SCALE
NIC	NOT IN CONTRACT
OD	OUTSIDE DIAMETER
OED	OPEN END DRAIN
PC	PLUMBING CONTRACTOR
PLBG	PLUMBING
PSI	POUNDS PER SQUARE INCH
RPBP	REDUCED PRESSURE BACKFLOW PREVENTER
SA	SHOCK ABSORBER
SH	SHOWER–FIXTURE IDENTIFICATION
SK	SINK–FIXTURE IDENTIFICATION
SPEC	SPECIFICATION
SS	SOIL STACK
ST.ST.	STAINLESS STEEL
TW	TEMPERED WATER
TYP	TYPICAL
U	URINAL–FIXTURE IDENTIFICATION
V	VENT
VB	VACUUM BREAKER
VS	VENT STACK
VTR	VENT THRU ROOF
W	WASTE
WC	WATER CLOSET–FIXTURE IDENTIFICATION

VALVE LEGEND

	BALL VALVE
NC	BALL VALVE (NORMALLY CLOSED)
	GATE VALVE
NC	GATE VALVE (NORMALLY CLOSED)
OS&Y	OUTSIDE SCREW AND YOKE VALVE
	BUTTERFLY VALVE
	CHECK VALVE
	BALL VALVE (GAS)
	GAS COCK
	PLUG VALVE
MV	MIXING VALVE
	BALANCING VALVE
	ANGLE VALVE
T&P	TEMPERATURE AND PRESSURE RELIEF VALVE
	VACUUM RELIEF VALVE
	AQUASTAT
	THERMOMETER
PRV	PRESSURE REDUCING/REGULATING VALVE
PG	PRESSURE GAUGE
	BACK WATER VALVE
	GLOBE VALVE
	FLOW SWITCH
	SOLENOID VALVE
	NEEDLE VALVE
	MOTOR OPERATED GATE VALVE
	MOTOR OPERATED BALL VALVE

DESIGNATION INDICATOR



GENERAL

FD	FLOOR DRAIN
RD	ROOF DRAIN
TD	TRENCH DRAIN
AD	AREA DRAIN
CO	CLEANOUT
FCO	FLOOR CLEANOUT
GCO	GRADE CLEANOUT
	P–TRAP
	ELBOW UP OR RISE
	ELBOW DOWN OR DROP
	CAP OR END OF PIPE
HB	HOSE BIBB
WH	WALL HYDRANT
	TEE LOOKING UP
	TEE LOOKING DOWN
	UNION
VIV	VALVE IN VERTICAL
RPBP	REDUCED PRESSURE ZONE BACKFLOW PREVENTER
	STRAINER
WHA/SA	WATER HAMMER ARRESTOR/SHOCK ABSORBER
CTE	CONNECT TO EXISTING
ETR	EXISTING TO REMAIN
ETBR	EXISTING TO BE REMOVED
	FLOW IN DIRECTION OF ARROW
	DIRECTION OF SLOPE
CNR	CONCENTRIC REDUCER
	PIPE SLEEVE
ECC	ECCENTRIC REDUCER
	DOUBLE WALL PIPING
	PIPE ANCHOR
	PIPE GUIDE
	EXPANSION JOINT
	FLEXIBLE CONNECTOR
	IN–LINE FILTER
FM	FLOW METER
	LIMIT OF WORK
	LIMIT OF DEMOLITION
HC	HANDICAPPED ACCESSIBLE
NUM	KEY NOTE DESIGNATION

PIPING LEGEND

CW	COLD WATER
	COLD WATER BELOW SLAB
HW	HOT WATER
	HOT WATER BELOW SLAB
HWR	HOT WATER RETURN
	HOT WATER RETURN BELOW SLAB
S or W	SOIL OR WASTE ABOVE GROUND
S or W	SOIL OR WASTE BELOW SLAB
V	VENT ABOVE GROUND
V	VENT BELOW SLAB
RL	RAIN LEADER ABOVE GROUND
RL	RAIN LEADER BELOW SLAB
PD	PUMP DISCHARGE
FM	FORCE MAIN
IW	INDIRECT WASTE
IW	INDIRECT WASTE BELOW SLAB
P–	PCW PROTECTED COLD WATER
P– –	PHW PROTECTED HOT WATER
P– – –	PHWR PROTECTED HOT WATER RECIRCULATING
G	NATURAL GAS PIPING
GV	GAS VENT PIPING
G(P)	PROPANE GAS PIPING
TW	TEMPERED WATER
140°F– –	140°F HOT WATER
140°F– – –	140°F HOT WATER RETURN
180°F– –	180°F HOT WATER
180°F– – –	180°F HOT WATER RETURN
CRW	CRW CHEMICAL RESISTANT WASTE PIPING
CRW	CRW CHEMICAL RESISTANT WASTE PIPING BELOW SLAB
CRV	CRV CHEMICAL RESISTANT VENT PIPING
CRV	CRV CHEMICAL RESISTANT VENT PIPING BELOW SLAB
AW	AW ACID WASTE
AW	AW ACID WASTE BELOW SLAB
AV	AV ACID VENT
AV	AV ACID VENT BELOW SLAB
A	A,CA COMPRESSED AIR
OX	OX OXYGEN PIPING
VAC	VAC VACUUM PIPING
N2	N2 NITROGEN PIPING
N2O	N2O NITROUS OXIDE PIPING
DI	DI DISTILLED WATER
DE	DE DEIONIZED WATER
SW	SW SOFT WATER
KW	KW KITCHEN WASTE ABOVE SLAB
KW	KW KITCHEN WASTE BELOW SLAB
GW	GW GREASE WASTE
	HEAT TRACE/TEMPERATURE MAINTENANCE – CIRCUIT CONTINUED ON ANOTHER DRAWING
	HEAT TRACE/TEMPERATURE MAINTENANCE – END OF CIRCUIT
	HEAT TRACE/TEMPERATURE MAINTENANCE – COLD WATER SUPPLY PIPE HEAT TRACED
–/–	HEAT TRACE/TEMPERATURE MAINTENANCE – HOT WATER SUPPLY PIPE HEAT TRACED
1	HEAT TRACE/TEMPERATURE MAINTENANCE – POWER CONNECTION
NP –	NPCW NON POTABLE COLD WATER
NP – –	NPHW NON POTABLE HOT WATER
NP – – –	NPHWR NON POTABLE HOT WATER RECIRCULATING
DWS	DWS CHILLED DRINKING WATER SUPPLY
DWR	DWR CHILLED DRINKING WATER RECIRCULATING
CL	CL CHLORINATED WATER

GENERAL NOTES

1. PLUMBING WORK SHALL BE DONE IN ACCORDANCE WITH THE LATEST EDITION OF THE STATE PLUMBING AND GAS CODE INCLUDING ALL LOCAL AMENDMENTS.
2. OBTAIN ALL PERMITS AND PAY ALL FEES ASSOCIATED WITH THIS WORK PRIOR TO COMMENCEMENT.
3. PIPING AND EQUIPMENT IS SHOWN DIAGRAMMATICALLY. THE ACTUAL ROUTING OF PIPING AND EXACT LOCATION OF EQUIPMENT SHALL BE DETERMINED IN THE FIELD.
4. IN ADDITION TO REVIEWING AND COORDINATING WITH THE OTHER TRADES (CIVIL, STRUCTURAL, ARCHITECTURAL, FIRE PROTECTION, HVAC, AND ELECTRICAL) THE CONTRACTOR SHALL VISIT THE SITE AND FAMILIARIZE HIMSELF WITH DETAILS OF CONSTRUCTION.
5. FURNISH AND INSTALL ALL NECESSARY PIPING, EQUIPMENT SUPPORTS AND ANY EQUIPMENT NOT SHOWN ON DRAWINGS OR CALLED FOR IN THE SPECIFICATIONS BUT NECESSARY TO PROVIDE A COMPLETE AND WORKABLE SYSTEM.
6. PROVIDE ACCESSIBLE SHUTOFF VALVES ON ALL BRANCH PIPING AND ON ALL SUPPLY PIPING TO INDIVIDUAL FIXTURES AND EQUIPMENT.
7. PROVIDE ACCESS TO ALL EQUIPMENT REQUIRING PERIODIC SERVICE AND MAINTENANCE.
8. FURNISH ACCESS PANELS TO THE GENERAL CONTRACTOR FOR INSTALLATION UNDER THE RELATED TRADES.
9. PITCH ALL WATER LINES TO DRAIN.
10. INSTALL HORIZONTAL RUNS OF WATER PIPING AS HIGH AS POSSIBLE AND PROVIDE DRAIN–OFFS AT ALL LOW POINTS.
11. HOT WATER TAKEOFFS SHALL HAVE NOT LESS THAN THREE ELBOW SWINGS.
12. PROVIDE DRAIN VALVE ON HOUSE SIDE OF WATER METER.
13. PIPING SHALL RUN CONCEALED IN ALL AREAS WITH THE EXCEPTION OF MECHANICAL ROOMS, AREAS WHERE NO CEILING EXISTS OR WHERE NOTED ON THE PLANS.
14. INSTALL DIELECTRIC COUPLINGS BETWEEN DISSIMILAR MATERIALS.
15. PROVIDE DANDY CLEANOUTS AT THE BASE OF ALL SANITARY AND RAINWATER STACKS.
16. PROVIDE DRIP LEGS FOR ALL GAS RISERS.
17. AN AIR GAP OF AT LEAST TWICE THE EFFECTIVE DIAMETER OF THE DRAIN SERVED SHALL BE PROVIDED ON ALL EQUIPMENT DRAINS PIPED TO FLOOR DRAINS.
18. REQUIRED FIRE RESISTANCE RATING OF FLOORS, WALLS AND CEILINGS SHALL BE MAINTAINED WHEN PIPE PENETRATIONS ARE MADE.
19. REFER TO RISER DIAGRAMS AND DETAILS FOR PIPE AND EQUIPMENT SIZES NOT SHOWN ON THE PLANS.
20. ALL WORK SHOWN ON RISER DIAGRAMS BUT NOT ON PLANS OR VICE VERSA SHALL BE INCLUDED AS IF SHOWN ON BOTH.
21. SEE SPECIFICATIONS FOR OTHER REQUIREMENTS.

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REVISIONS

	DATE	CHK	DESCRIPTION

SEAL

PROJECT

NUMBER 20110321

DATE 09-02-11

NEWTON PUBLIC SCHOOLS
BOWEN/COUNTRYSIDE ELEMENTARY SCHOOL
BOILER RENOVATION
NEWTON, MA 02459

DRAWING

DRAWN BY KVM

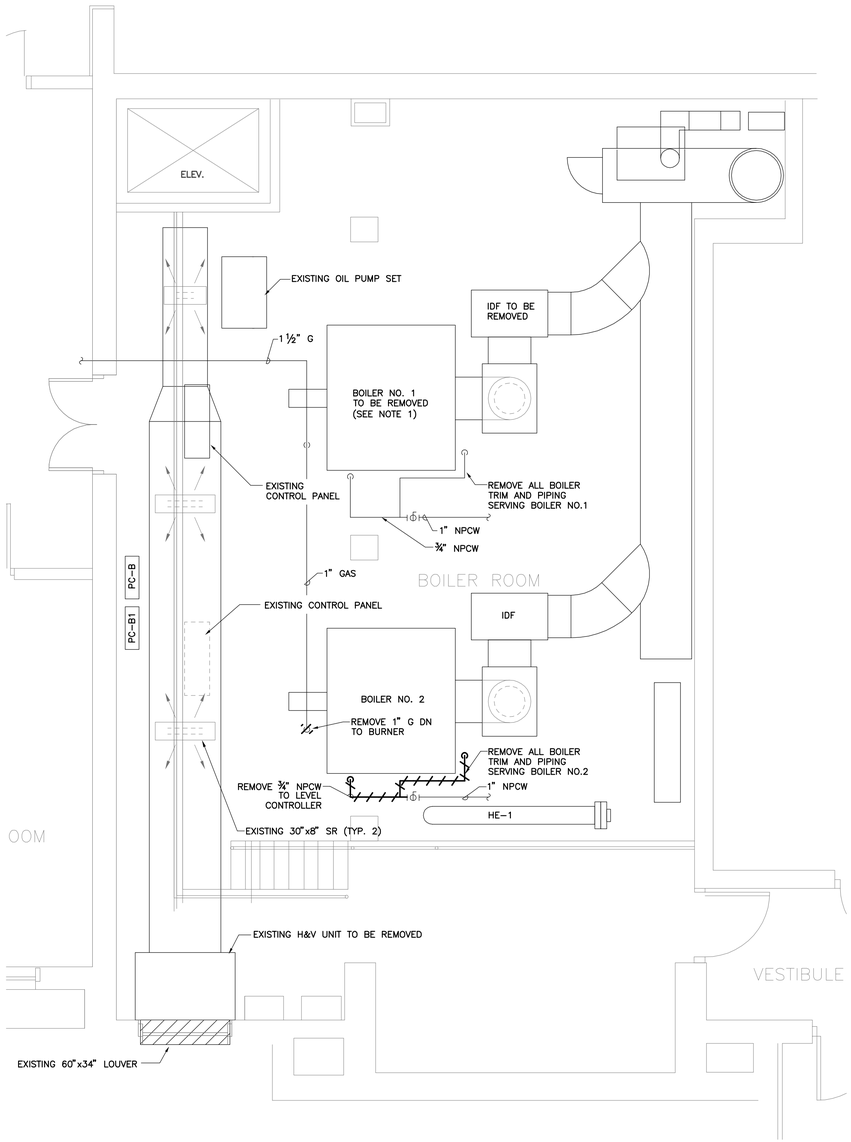
CHECKED BY WW

SCALE NONE

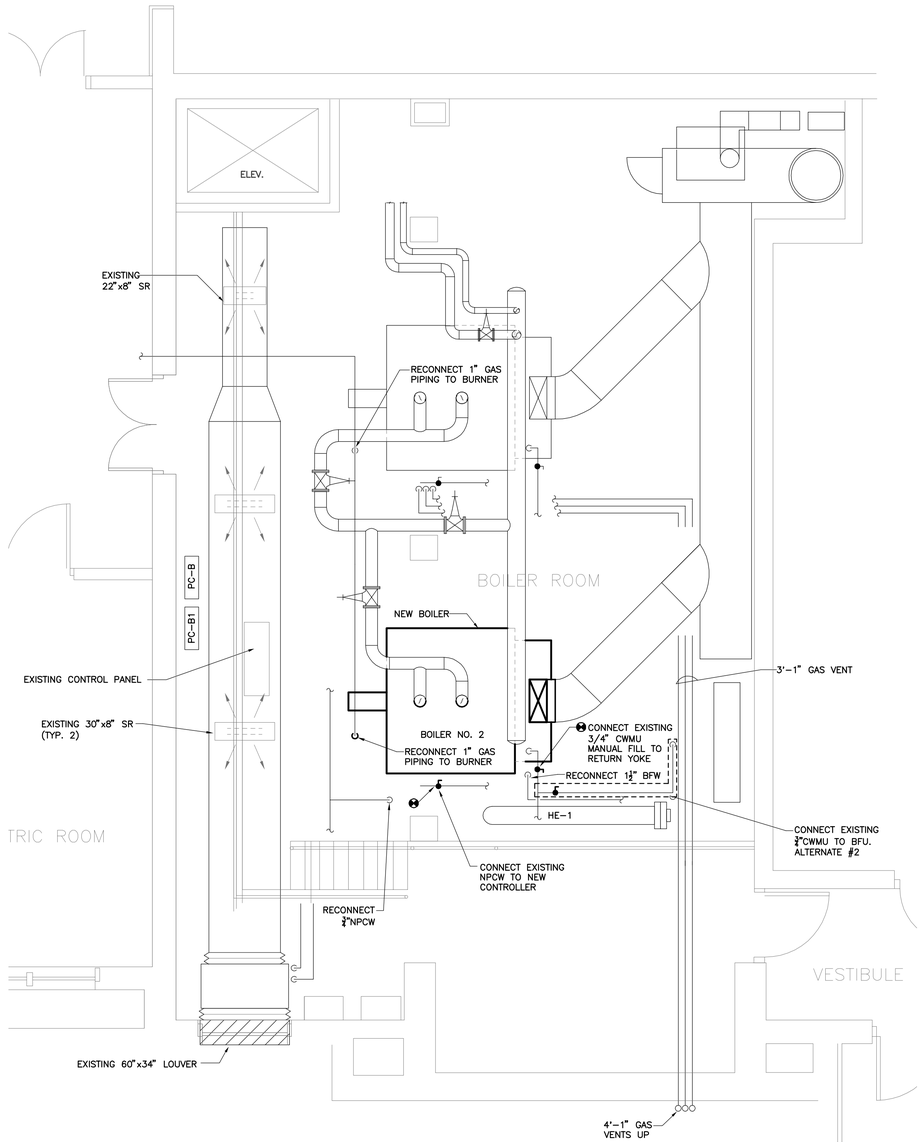
PLUMBING LEGENDS, NOTES, SCHEDULE, DETAILS AND ABBREVIATIONS

100% CONTRUCTION DOCUMENTS
09-02-2011

P0.00



PLUMBING - BOWEN BOILER ROOM
EXISTING CONDITIONS/DEMOLITION PIPING PART PLAN
SCALE: 1/4"=1'-0"



PLUMBING - BOWEN BOILER ROOM
NEW WORK PIPING AND EQUIPMENT PART PLAN
SCALE: 1/4"=1'-0"

100% CONTRUCTION DOCUMENTS
09-02-2011

1/4" = 1' - 0"
0 4' 8'

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KEYPLAN

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BOWEN/COUNTRYSIDE ELEMENTARY SCHOOL
BOILER RENOVATION
NEWTON, MA 02459

DRAWING

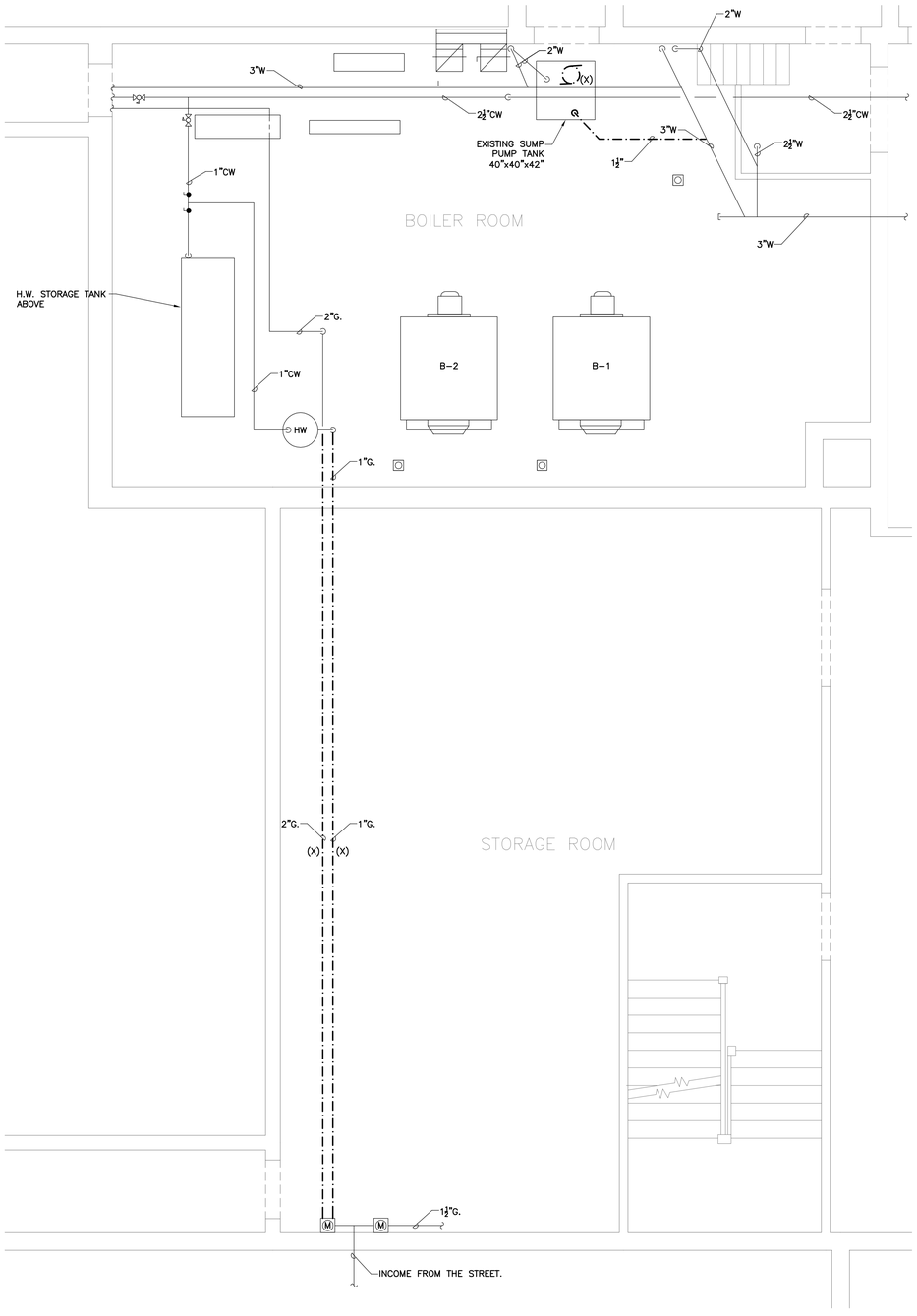
DRAWN BY
KVM

CHECKED BY
WW

SCALE
AS NOTED

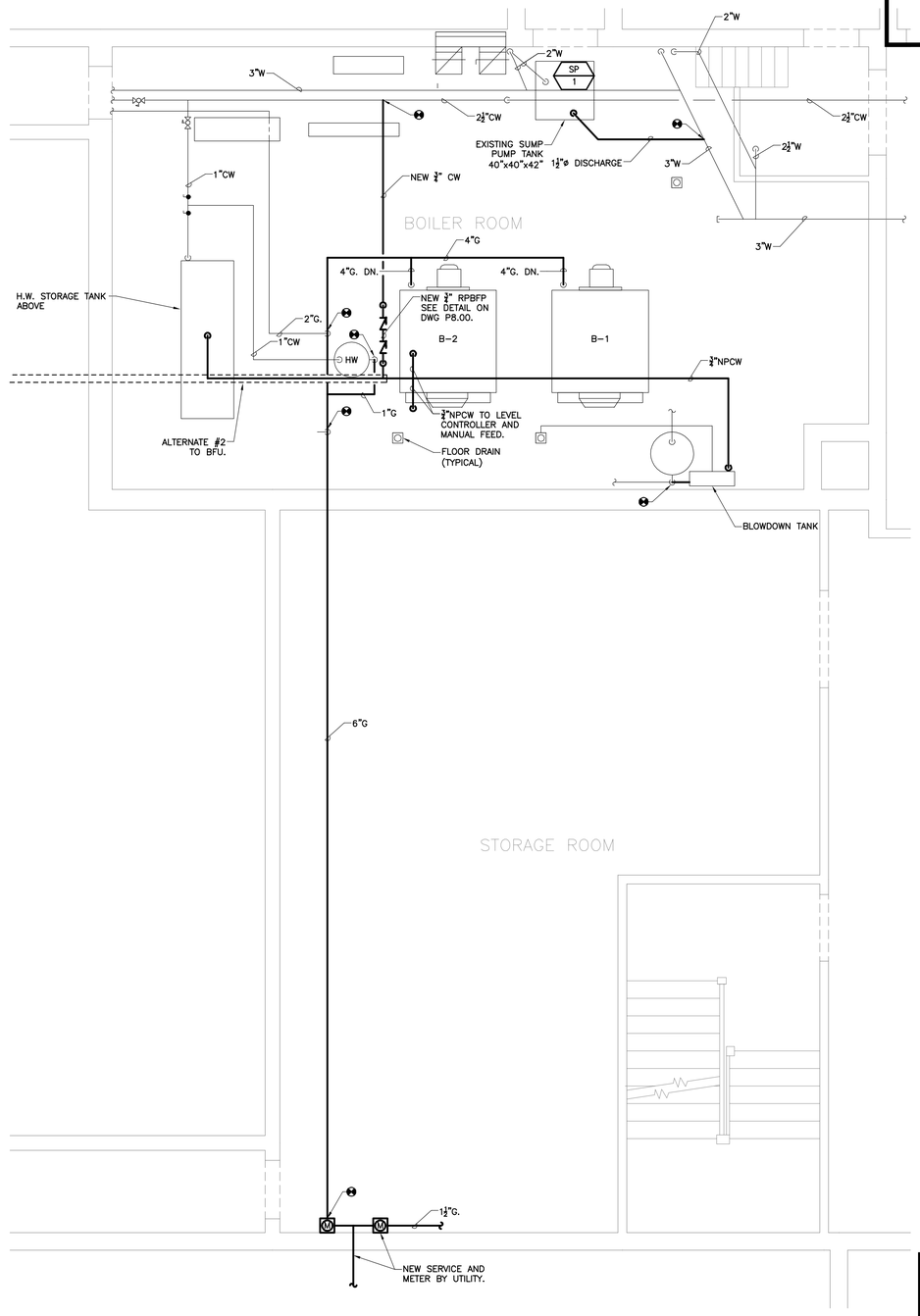
PLUMBING
BOILER ROOM
NEW WORK PLAN

P2.00



PLUMBING - COUNTRYSIDE BOILER ROOM
DEMOLITION PART PLAN

SCALE: 1/4"=1'-0"



PLUMBING - COUNTRYSIDE BOILER ROOM
NEW WORK PART PLAN

SCALE: 1/4"=1'-0"

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CHECKED BY
WW

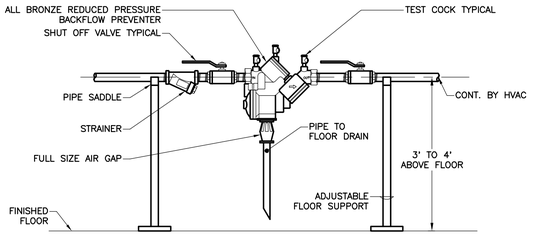
SCALE
AS NOTED

PLUMBING
BOILER ROOM
DEMOLITION AND
NEW WORK
PART PLAN

100% CONTRUCTION DOCUMENTS
09-02-2011

1/4" = 1' - 0"
0 4' 8'

P2.01



RDK REDUCED PRESSURE BACKFLOW PREVENTER P100

COUNTRYSIDE SUMP PUMP SCHEDULE

TAG	SERVICE	LOCATION	CASING TYPE	FLUID		GPM	NPSHR (FT.)	HEAD (FT.)	SHUT-OFF HEAD (FT.)	IMPELLER SIZE (IN.)	WORKING PRESS. (PSIG)	MOTOR					MANUFACTURER AND MODEL NUMBER (AS STANDARD)	REMARKS
				TYPE	TEMP (°F)							RPM	BHP	HP	V	PH		
SP-1	SUMP	BOILER ROOM	CAST IRON		200	65	2	10	20					1	208	3	WQ12-1412	SEE NOTE 2.

NOTES:

1. REFER TO SPECIFICATIONS, DETAILS, AND CONTROL DRAWINGS FOR ADDITIONAL INFORMATION.
2. PROVIDE WITH A FLOAT SWITCH CONTROL.

KEYPLAN

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DRAWING

DRAWN BY KVM

CHECKED BY WW

SCALE N.T.S.

PLUMBING DETAILS AND SCHEDULE

100% CONTRUCTION DOCUMENTS
09-02-2011

1/4" = 1' - 0"
0 4' 8'

P8.00

GENERAL DEMOLITION NOTES

1. REFER TO THIS DRAWING FOR LEGEND, SYMBOLS AND GENERAL NOTES.

2. REFER TO THE DRAWINGS FOR THE FULL EXTENT OF THE SCOPE OF DEMOLITION. DISCONNECT AND MAKE SAFE ALL ELECTRICAL EQUIPMENT IDENTIFIED FOR REMOVAL ON THE HVAC AND PLUMBING PLANS. THE ELECTRICAL SCOPE MAY EXTEND BEYOND THE AREA DEFINED BY THE ARCHITECTURAL DEMOLITION LIMITS TO FULLY COMPLY WITH VARIOUS REQUIREMENTS DEFINED BY THESE NOTES.

3. THE ELECTRICAL DEMOLITION PLANS AND DETAILS INDICATE THE GENERAL INTENT AND ARE NOT INTENDED TO SHOW ALL ITEMS TO BE REMOVED OR RETAINED. THE ELECTRICAL CONTRACTOR SHALL VISIT THE SITE PRIOR TO THE SUBMISSION OF BIDS TO BECOME FAMILIAR WITH THE ACTUAL CONDITIONS AND EXTENT OF WORK. DEVICES AND EQUIPMENT LOCATED ON WALLS AND/OR CEILINGS TO BE REMOVED SHALL BE DISCONNECTED AND MADE SAFE. THE ELECTRICAL CONTRACTOR SHALL NOTIFY THE OWNER'S REPRESENTATIVE OF ANY UNANTICIPATED HIDDEN CONDITIONS ENCOUNTERED DURING DEMOLITION.

4. THE ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR THE REPAIR OF ALL SYSTEMS OR BUILDING COMPONENTS DAMAGED DURING THE EXECUTION OF THE WORK. DAMAGE SHALL INCLUDE BUT NOT BE LIMITED TO DESTRUCTION OR DISPOSAL OF ITEMS INTENDED TO REMAIN OR TO BE SALVAGED.

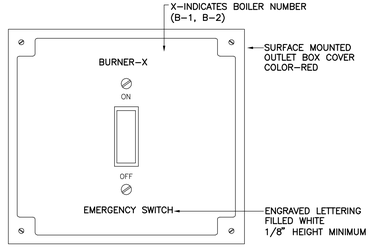
5. THE ELECTRICAL CONTRACTOR SHALL CIRCUIT TRACE AND LABEL ALL EXISTING BRANCH CIRCUITS AND FEEDERS WITHIN THE AREA OF DEMOLITION SCOPE PRIOR TO DE-ENERGIZING AND DISCONNECTION. ALL CIRCUITS WITHIN PANELBOARDS IDENTIFIED FOR REMOVAL SHALL BE TRACED AND LABELED TO ENSURE THAT NO AREA OUTSIDE THE DEMOLITION SCOPE LIMIT IS AFFECTED.

6. THE ELECTRICAL CONTRACTOR SHALL IDENTIFY ALL BRANCH CIRCUITS, FEEDERS AND SYSTEM COMPONENTS, WHICH ARE TO REMAIN WITHIN THE AREA OF DEMOLITION SCOPE. THERE SHALL BE NO INTERRUPTION OF SERVICE TO ANY AREA OUTSIDE THE SCOPE LIMITS WITHOUT APPROVAL FROM THE OWNER'S REPRESENTATIVE. EXISTING EQUIPMENT TO REMAIN SHALL BE LEFT IN A CODE COMPLIANT MANNER.

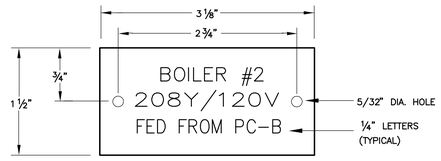
7. THE ELECTRICAL CONTRACTOR SHALL DE-ENERGIZE AND REMOVE ALL CONDUCTORS AND RACEWAYS TO THEIR POINTS OF ORIGIN WITHIN THE AREA OF DEMOLITION SCOPE. ITEMS IDENTIFIED FOR DEMOLITION SHALL NOT BE ABANDONED IN PLACE. RACEWAYS THAT ENTER MASONRY WALLS AND FLOORS SHALL BE CUT FLUSH AT THE SURFACE FOR PATCHING. ALL CIRCUIT BREAKERS ASSOCIATED WITH THE DEMOLITION SCOPE SHALL BE DE-ENERGIZED/TURNED OFF AND LABELED SPARE.

8. THE ELECTRICAL CONTRACTOR SHALL TEMPORARILY SUPPORT ALL ITEMS TO REMAIN THAT ARE AFFECTED BY THE DEMOLITION OF BUILDING STRUCTURAL COMPONENTS (WALLS, CEILINGS, ETC.). TEMPORARILY SUPPORTED ITEMS SHALL BE PERMANENTLY SUPPORTED AND INSTALLED WHEN FINALIZED STRUCTURES ARE IN PLACE.

9. ALL REMOVED ITEMS SHALL BE LEGALLY DISPOSED OF UNLESS IDENTIFIED FOR REUSE. THE OWNER'S REPRESENTATIVE SHALL INSPECT ALL RETAINED ITEMS PRIOR TO PLACEMENT IN THE IDENTIFIED STORAGE LOCATION BY THE ELECTRICAL CONTRACTOR.



EMERGENCY SHUT-OFF SWITCH OUTLET BOX COVER



NOTES:
1. REFER TO SPECIFICATIONS FOR ADDITIONAL NAMEPLATE REQUIREMENTS.

2. NAMEPLATE TO BE 1/16" THICK PLASTIC WITH WHITE CENTER LAMINATION. FACE SHALL BE BLACK, ENGRAVED LETTERS SHALL BE WHITE.

3. SECURE NAMEPLATE TO SURFACES WITH (2) FLAT HEAD STAINLESS STEEL OR BRASS SCREWS. ADHESIVE CEMENT SHALL NOT BE ALLOWED.

4. TYPICAL FOR "STARTERS", AND "DISCONNECTS".

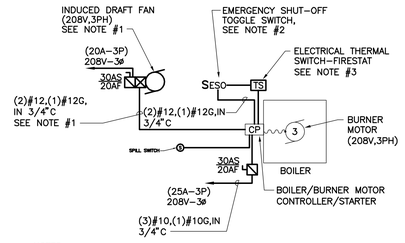
TYPICAL NAMEPLATE DETAIL

MOTOR & CONTROLS LEGEND

(2)	MOTOR, NUMERAL INDICATES HORSEPOWER. "2" – INDICATES HORSEPOWER RATING
60AS / 50AF	COMBINATION FUSED DISCONNECT MAGNETIC MOTOR STARTER. REFER TO MAGNETIC MOTOR STARTER AND VFD SCHEDULE FOR TYPE, SIZE AND ENCLOSURE
60AS 3R	DISCONNECT SWITCH RATED 30AMP, 3-POLE, IN NEMA TYPE 1 ENCLOSURE, UNLESS OTHERWISE NOTED "3R" – INDICATES NEMA TYPE 3R ENCLOSURE "2P" – INDICATES 2 POLE SINGLE PHASE DISCONNECT "60AS" – INDICATES 60A SWITCH
60AS / 50AF	FUSED DISCONNECT SWITCH, 3-POLE, IN NEMA TYPE 1 ENCLOSURE, UNLESS OTHERWISE NOTED. "3R" – INDICATES NEMA TYPE 3R ENCLOSURE "60AS" – INDICATES 60AMP SWITCH "50AF" – INDICATES 50AMP FUSES
CP	EQUIPMENT CONTROL PANEL
T	LINE VOLTAGE THERMOSTAT (BY OTHER).
CV	LINE VOLTAGE CONTROL VALVE (BY OTHER).
AQ	LINE VOLTAGE AQUSTAT (BY OTHER).

POWER DISTRIBUTION

	120/208 VOLT PANELBOARD, SURFACE MOUNTED.



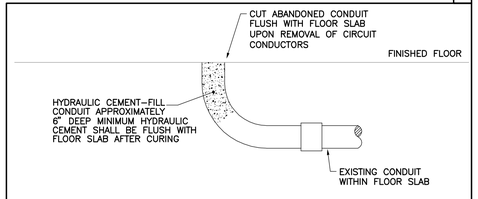
NOTES:
1. INDUCED DRAFT FAN SHALL BE INTERLOCKED WITH BURNER MOTOR. PROVIDE CONTROL WIRING AS INDICATED.

2. PROVIDE SURFACE MOUNTED EMERGENCY SHUT-OFF TOGGLE SWITCH FOR BOILER AS INDICATED. MOUNT SWITCH 6'-0" TO CENTERLINE AFF ADJACENT TO ENTRY DOOR AT BOILER ROOM. PROVIDE RED ENGRAVED OUTLET BOX COVER.

3. PROVIDE AN ELECTRICAL THERMAL SWITCH AT EACH BURNER-BOILER AS INDICATED. THERMAL SWITCH SHALL BE FUSED TO BREAK THE UNGROUNDED CONDUCTOR IN THE BRANCH CIRCUIT AT 165'F. MOUNT THERMAL SWITCH WITHIN SIX FEET OVER THE TOP OF THE BURNER-BOILER.

4. PROVIDE SPILL SWITCH TO INTERCEPT START CIRCUIT/SHUT DOWN TO BURNER.

BOILER BURNER MOTOR SCHEMATIC WIRING DIAGRAM



DEMOLITION DETAIL ABANDONED CONDUIT WITHIN FLOOR SLAB

WIRING DEVICE LEGEND

SESO	SINGLE POLE TOGGLE SWITCH RATED 20A, 120/208V, FOR GAS BOILER EMERGENCY SHUT-OFF
PB	PULLBOX
J	JUNCTION BOX
5 GFI	DUPLEX RECEPTACLE, GROUNDING TYPE, RATED 20A, 125V "5"- INDICATES CIRCUIT NUMBER "GFI"- INDICATES INTEGRAL GROUND FAULT CIRCUIT INTERRUPTER

BRANCH CIRCUIT & FEEDER LEGEND

	BRANCH CIRCUIT OR FEEDER CONCEALED IN FINISHED AREAS.
	BRANCH CIRCUIT OR FEEDER, CONCEALED IN OR UNDER FLOOR SLAB.
	BRANCH CIRCUIT OR FEEDER TURNING UP TOWARDS OBSERVER.
	BRANCH CIRCUIT OR FEEDER TURNING DOWN AWAY FROM OBSERVER.
	CONDUIT STUBBED AND CAPPED FOR FUTURE USE
R22A-1,3,5	BRANCH CIRCUIT HOME RUN TICKS INDICATE QUANTITY OF CONDUCTORS, GROUND CONDUCTORS NOT INDICATED. NO TICKS INDICATES 2#12 & 1#12G IN 3/4"C MINIMUM. R22A-1,3,5 INDICATES PANEL AND CIRCUIT DESIGNATION FROM WHICH HOMERUN SHALL ORIGINATE. EACH CIRCUIT SHALL BE 1P20 (SINGLE POLE 20 AMPERE) UNLESS NOTED OTHERWISE
	FLEXIBLE CONNECTION TO EQUIPMENT. RACEWAY AND CONDUCTOR RATING TO MATCH ASSOCIATED BRANCH CIRCUIT OR FEEDER.
—E—	BRANCH CIRCUIT FOR EMERGENCY BATTERY DC CIRCUIT, MINIMUM 2#10 IN 3/4"C. UNLESS OTHERWISE NOTED

EXISTING EQUIPMENT LEGEND

XM	EXISTING EQUIPMENT TO REMAIN
X	EXISTING EQUIPMENT TO BE REMOVED
XR	EXISTING EQUIPMENT TO BE RELOCATED
XN	NEW LOCATION OF EXISTING RELOCATED EQUIPMENT
NR	EXISTING EQUIPMENT TO BE REMOVED AND NEW EQUIPMENT TO BE INSTALLED ON EXISTING BRANCH/FEEDER
	EXISTING EQUIPMENT FOR INFORMATION ONLY- INDICATED BY SYMBOL WITH LIGHT AND OUT OF FUNCTION LINE TYPE
	EXISTING EQUIPMENT TO BE REWORKED- INDICATED BY SYMBOL WITH DASHED AND IN FUNCTION LINE TYPE

ABBREVIATIONS

A/AMP	AMPERE	HP	HORSEPOWER
AFF	ABOVE FINISHED FLOOR	HPS	HAVERHILL PUBLIC SCHOOLS
AFG	ABOVE FINISHED GRADE	JB	JUNCTION BOX
AWG	AMERICAN WIRE GAUGE	KVA	KILOVOLT AMPERE
ATC	AUTOMATED TEMPERATURE CONTROL	KW	KILOWATT
BLDG	BUILDING	MEC	MASSACHUSETTS ELECTRICAL CODE
C	CONDUIT		
CKT	CIRCUIT	MTG	MOUNTING
CB	CIRCUIT BREAKER	MTD	MOUNTED
CU	COPPER	NTS	NOT TO SCALE
DWG	DRAWING	NO., #	NUMBER
EC	ELECTRICAL CONTRACTOR	RGS	RIGID GALVANIZED STEEL
EMT	ELECTRICAL METALLIC TUBING	PVC	POLYVINYL CHLORIDE CONDUIT
GC	GENERAL CONTRACTOR	TYP	TYPICAL
GND	GROUND	V	VOLTS
GFI	GROUND FAULT INTERRUPTING	VA	VOLTAGE AMPERE
HVAC	HEATING, VENTILATING AND AIR CONDITIONING	WP	WEATHERPROOF
		℄	CENTERLINE

100% CONTRUCTION DOCUMENTS
09-02-2011

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REVISIONS

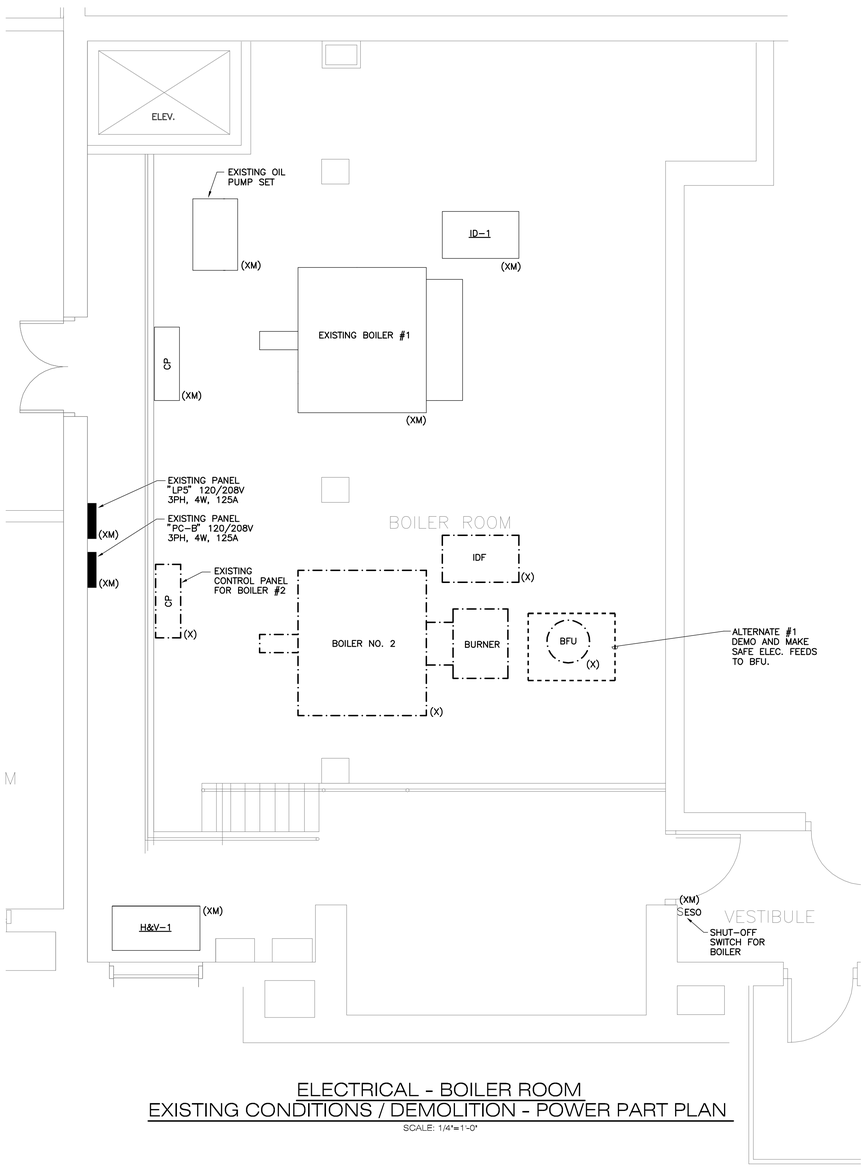
DATE	CHK	DESCRIPTION

SEAL

PROJECT
NUMBER 20110321
DATE 09-02-11
NEWTON PUBLIC SCHOOLS
BOWEN/COUNTRYSIDE ELEMENTARY SCHOOL
BOILER RENOVATION
NEWTON, MA 02459

DRAWING
DRAWN BY KVM
CHECKED BY WW
SCALE NONE
ELECTRICAL LEGENDS, NOTES, SCHEDULE, DETAILS AND ABBREVIATIONS

E0.00



ELECTRICAL - BOILER ROOM
EXISTING CONDITIONS / DEMOLITION - POWER PART PLAN

SCALE: 1/4"=1'-0"

POWER DEMOLITION NOTES:

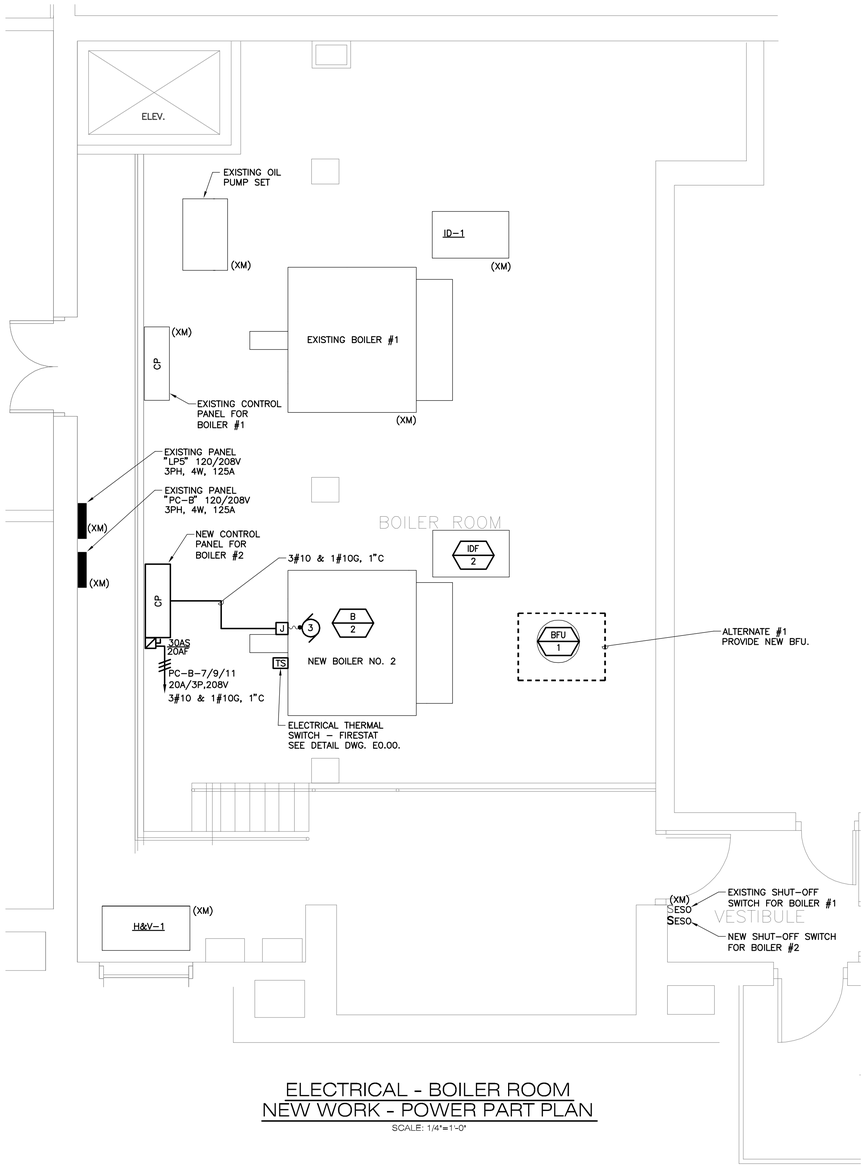
1. REFER TO DRAWING E0.00 FOR LEGEND, SYMBOLS AND GENERAL NOTES.

2. DISCONNECT POWER FROM ALL MECHANICAL EQUIPMENT SCHEDULED FOR REMOVAL AND MAKE SAFE FOR DEMOLITION.

3. ELECTRICAL DEMOLITION SHALL INCLUDE THE REMOVAL OF ALL ASSOCIATED ELECTRICAL EQUIPMENT – DISCONNECT SWITCHES, MOTOR STARTERS AND/OR CONTROL COMPONENTS. THIS SHALL ALSO INCLUDE THE REMOVAL OF FEEDER CIRCUITRY, (CONDUIT AND CONDUCTORS), FROM THE EQUIPMENT BACK TO THE RESPECTIVE PANEL/POWER SOURCE UNLESS NOTED OTHERWISE.

4. TRACE AND VERIFY ALL FEEDER CIRCUITS PRIOR TO DEMOLITION IN ACCORDANCE WITH GENERAL DEMOLITION NOTE–5 ON DRAWING E0.00.

5. EXISTING CIRCUIT BREAKERS PREVIOUSLY SERVING LOADS SCHEDULED FOR REMOVAL, AND NOT DESIGNATED FOR REUSE, SHALL BE TURNED OFF AND LABELED SPARE.



ELECTRICAL - BOILER ROOM
NEW WORK - POWER PART PLAN

SCALE: 1/4"=1'-0"

PART PLAN NEW WORK NOTES:

1. REFER TO DRAWING E0.00 FOR LEGEND, SYMBOLS AND GENERAL NOTES.

2. REFER TO MECHANICAL DRAWINGS FOR ASSOCIATED NOTES, MOUNTING DETAILS, HEIGHTS AND EXACT LOCATIONS OF EQUIPMENT.

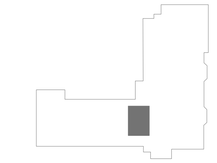
3. REFER TO DRAWING E0.00 FOR OIL BOILER BURNER MOTOR SCHEMATIC WIRING DIAGRAM.

4. PROVIDE CIRCUIT BREAKER AS SHOWN. MOUNT WITHIN AVAILABLE POLE SPACE AT EXISTING PANEL PC–B. CIRCUIT NUMBERS LISTED ARE DIAGRAMMATIC. UTILIZE POLE SPACES MADE AVAILABLE FROM DEMOLITION. NEW CIRCUIT BREAKER SHALL MATCH EXISTING IN STYLE, TYPE AND INTERUPTING CAPACITY.
   REFERENCE:
   EXISITNG PANEL PC–B IS GENERAL ELECTRIC, A SERIES.

5. CIRCUIT NUMBERS ARE DIAGRAMMATIC. EXACT NUMBERS SHALL BE DETERMINED IN THE FIELD AND REFLECTED ON AS–BUILT DOCUMENTATION BY THE ELECTRICAL CONTRACTOR. THE ASSOCIATED CIRCUIT NUMBERS THAT ARE APPLIED TO EACH DEVICE AND PIECE OF EQUIPMENT INFERS INTERCONNECTING BRANCH CIRCUITRY. INTERCONNECTING BRANCH WIRING SHALL BE SIZED EQUAL TO THE HOMERUN UNLESS NOTED OTHERWISE.

6. POWER BRANCH CIRCUITRY SHALL BE INSTALLED IN CONDUIT FROM THE PANEL TO THE FIRST DEVICE AND/OR WHERE EXPOSED. POWER BRANCH CIRCUITRY MAY BE TYPE MC CABLE WHERE CONCEALED ABOVE SUSPENDED CEILINGS AND IN METAL STUD WALLS.

7. MAINTAIN CONTINUITY OF BRANCH CIRCUITRY ASSOCIATED WITH ALL EXISTING POWER DEVICES TO REMAIN.



KEYPLAN

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BOILER RENOVATION
NEWTON, MA 02459

DRAWING

DRAWN BY
KVM

CHECKED BY
WW

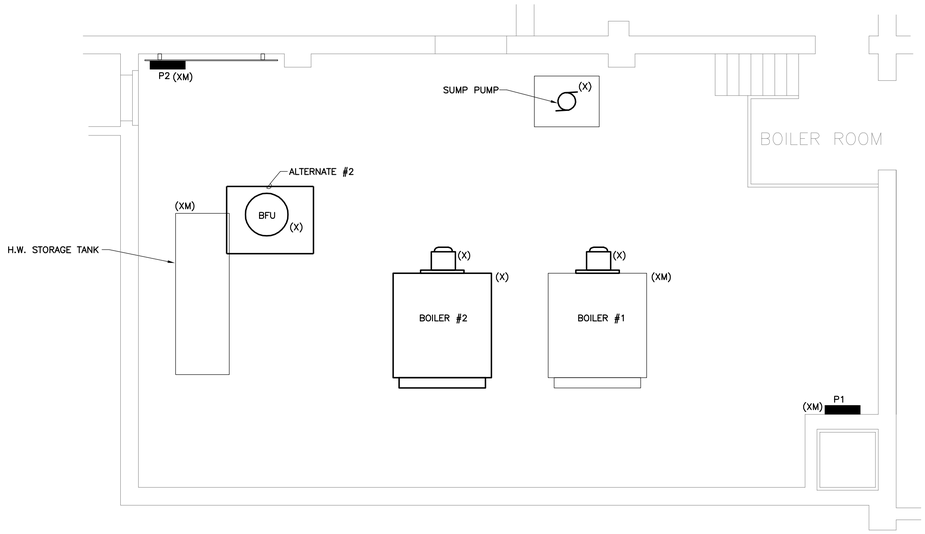
SCALE
1/4" = 1'-0"

ELECTRICAL
BOWEN - BOILER ROOM
DEMOLITION AND
NEW WORK
PART PLANS

100% CONTRUCTION DOCUMENTS
09-02-2011

1/4" = 1' - 0"
0 4' 8'

E2.00



ELECTRICAL - BOILER ROOM DEMOLITION PART PLAN

SCALE: 1/4"=1'-0"

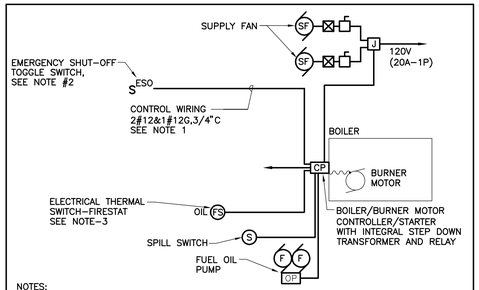
POWER DEMOLITION NOTES:

1. DISCONNECT POWER FROM ALL MECHANICAL EQUIPMENT SCHEDULED FOR REMOVAL AND MAKE SAFE FOR DEMOLITION.

2. ELECTRICAL DEMOLITION SHALL INCLUDE THE REMOVAL OF ALL ASSOCIATED ELECTRICAL EQUIPMENT – DISCONNECT SWITCHES, MOTOR STARTERS AND/OR CONTROL COMPONENTS. THIS SHALL ALSO INCLUDE THE REMOVAL OF FEEDER CIRCUITRY, (CONDUIT AND CONDUCTORS), FROM THE EQUIPMENT BACK TO THE RESPECTIVE PANEL/POWER SOURCE UNLESS NOTED OTHERWISE.

3. TRACE AND VERIFY ALL FEEDER CIRCUITS PRIOR TO DEMOLITION IN ACCORDANCE WITH GENERAL DEMOLITION NOTE-5 ON DRAWING E0.00.

4. EXISTING CIRCUIT BREAKERS PREVIOUSLY SERVING LOADS SCHEDULED FOR REMOVAL, AND NOT DESIGNATED FOR REUSE SHALL BE TURNED OFF AND LABELED SPARE.



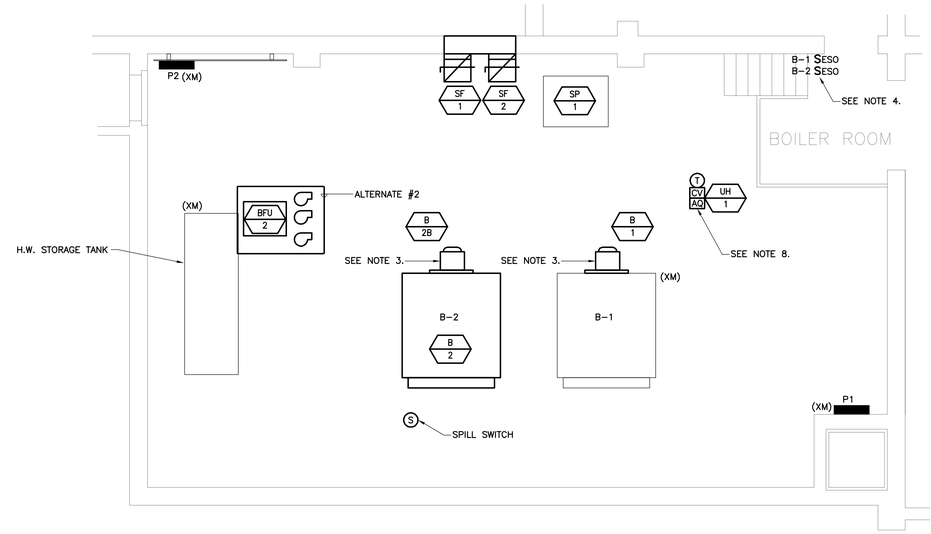
NOTES:
1. EMERGENCY SHUT OFF SWITCH SHALL BE INTERLOCKED WITH BURNER MOTOR AND INDUCED DRAFT FAN MOTOR. CONTROL WIRING SHALL BE TERMINATED ON THE 120V RELAY PROVIDED INTEGRAL WITH THE CONTROL PANEL. PROVIDE BRANCH CIRCUITRY AS INDICATED.

2. PROVIDE SURFACE MOUNTED EMERGENCY SHUT-OFF TOGGLE SWITCH FOR BOILER AS INDICATED. MOUNT SWITCH 5'-0" TO CENTERLINE AFF ADJACENT TO ENTRY DOOR AT BOILER ROOM. PROVIDE RED ENGRAVED OUTLET BOX COVER.

3. PROVIDE AN ELECTRICAL THERMAL SWITCH AT BOILER NO.2 AS INDICATED. THERMAL SWITCH SHALL BE FUSED TO BREAK THE UNGROUNDED CONDUCTOR IN THE BRANCH CIRCUIT AT 165°F. MOUNT THERMAL SWITCH WITHIN SIX FEET OVER THE TOP OF BOILER NO.2.

4. PROVIDE SPILL SWITCH TO INTERCEPT START CIRCUIT/SHUT DOWN TO BURNER.

RDK BOILER BURNER INSTALLATION WIRING DIAGRAM



MECHANICAL - BOILER ROOM NEW WORK PART PLAN

SCALE: 1/4"=1'-0"

NEW WORK POWER NOTES:

1. REFER TO DRAWING E0.00 FOR LEGEND, SYMBOLS AND GENERAL NOTES.

2. REFER TO MECHANICAL DRAWINGS FOR ASSOCIATED NOTES, MOUNTING DETAILS, HEIGHTS AND EXACT LOCATIONS OF EQUIPMENT.

3. REFER TO THIS DRAWING FOR BOILER BURNER MOTOR SCHEMATIC WIRING DIAGRAM.

4. PROVIDE SURFACE MOUNTED EMERGENCY SHUT-OFF TOGGLE SWITCH FOR NEW BOILER (B-1). MOUNT SWITCH 6'-0" TO CENTERLINE AFF ADJACENT TO ENTRY DOOR AT BOILER ROOM. PROVIDE RED ENGRAVED OUTLET BOX COVER. WIRE SHUT-OFF TOGGLE SWITCH TO NEW BOILER CONTROL PANEL. ASSUME (2)#12,(1)#12G. IN 3/4"C.. PRIOR TO ROUGH-IN CONTRACTOR TO CONFIRM WIRING WITH MANUFACTURES RECOMMENDATIONS FOR WIRING CONNECTIONS FOR A COMPLETE SYSTEM.

5. CIRCUIT NUMBERS ARE DIAGRAMMATIC. EXACT NUMBERS SHALL BE DETERMINED IN THE FIELD AND REFLECTED ON AS-BUILT DOCUMENTATION BY THE ELECTRICAL CONTRACTOR. THE ASSOCIATED CIRCUIT NUMBERS THAT ARE APPLIED TO EACH DEVICE AND PIECE OF EQUIPMENT INFERS INTERCONNECTING BRANCH CIRCUITRY. INTERCONNECTING BRANCH WIRING SHALL BE SIZED EQUAL TO THE HOMERUN UNLESS NOTED OTHERWISE.

6. POWER BRANCH CIRCUITRY SHALL BE INSTALLED IN CONDUIT FROM THE PANEL TO THE FIRST DEVICE AND/OR WHERE EXPOSED. POWER BRANCH CIRCUITRY MAY BE TYPE MC CABLE WHERE CONCEALED ABOVE SUSPENDED CEILINGS AND IN METAL STUD WALLS.

7. MAINTAIN CONTINUITY OF BRANCH CIRCUITRY ASSOCIATED WITH ALL EXISTING POWER DEVICES TO REMAIN.

8. PROVIDE LINE VOLTAGE WIRING PER COUNTRYSIDE-STEAM UNIT HEATER ON DRAWING. M7.01.

100% CONTRUCTION DOCUMENTS
09-02-2011

1/4" = 1' - 0"
0 4' 8'

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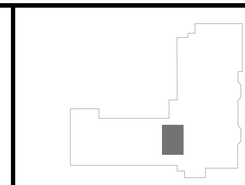

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NEWTON PUBLIC SCHOOLS
BOWEN/COUNTRYSIDE
ELEMENTARY SCHOOL
BOILER RENOVATION
NEWTON, MA 02459

DRAWING
DRAWN BY KVM
CHECKED BY WW
SCALE AS NOTED

ELECTRICAL
COUNTRYSIDE
BOILER ROOM
DEMLOLITION AND NEW
WORK PART PLAN

E2.01

MECHANICAL EQUIPMENT SCHEDULE

LOAD TAG	LOCATION	LOAD HP	LOAD FLA	LOAD KVA	LOAD VOLT	LOAD PH	STARTER NEMA SIZE	STARTER TYPE	OVERCURRENT CB	OVERCURRENT RK1 FUSE	OVERCURRENT MCP	PB	HOA	INDICATING LIGHTS R	INDICATING LIGHTS G	INDICATING LIGHTS A	AUXILIARY CPT	AUXILIARY CONTACTS NO	AUXILIARY CONTACTS NC	POWER SOURCE PANEL	POWER SOURCE C/B	CONNECTION FLEX	CONNECTION JB	CONNECTION REC	CONNECTION DISC AS	CONNECTION DISC AF	CONNECTION DISC NEMA	BRANCH CIRCUIT	REMARKS
B-2	BOWEN	3	10.6	3.8	208	3	1	-	-	-	-	-	-	-	-	-	-	-	-	LP5	20A/3P	X	-	-	30	-	1	4#12 & #12G - 3/4"C	NOTE 10
IDF-2	BOWEN	1/2	2.4	0.9	208	3	1	FVNR	-	-	-	-	-	-	-	-	-	-	-	PC-B	20A/3P	X	-	-	30	-	1	4#12 & #12G - 3/4"C	NOTE 10
BFU-1	BOWEN	2	7.5	2.7	208	3	1	FVNR	-	-	-	-	-	-	-	-	-	-	-	PC-B		X	-	-	30	-	1	4#12 & #12G - 3/4"C	NOTE 10
B-2	COUNTRYSIDE	1 1/2	6.6	2.4	208	3	1	-	-	-	-	-	-	-	-	-	-	-	-	P1	15A/3P	X	-	-	30	-	1	4#12 & #12G - 3/4"C	NOTE 10
BFU-2	COUNTRYSIDE	2	7.5	2.7	208	3	1	FVNR	-	-	-	-	-	-	-	-	-	-	-	P1	20A/3P	X	-	-	30	-	1	4#12 & #12G - 3/4"C	NOTE 10
SP-1	COUNTRYSIDE	1	4.6	1.7	208	3	1	-	-	-	-	-	-	-	-	-	-	-	-	P1		X	-	-	30	-	1	4#12 & #12G - 3/4"C	NOTE 10
B-1	COUNTRYSIDE	1 1/2	6.6	2.4	208	3	1	FVNR	-	-	-	-	-	-	-	-	-	-	-	P1	15A/3P	X	-	-	30	-	1	4#12 & #12G - 3/4"C	NOTE 10
B-2B	COUNTRYSIDE	1 1/2	6.6	2.4	208	3	1	FVNR	-	-	-	-	-	-	-	-	-	-	-	P1		X	-	-	30	-	1	4#12 & #12G - 3/4"C	NOTE 10
SF-1	COUNTRYSIDE	1/6	4.4	0.5	120	1	-	FVNR	-	-	-	-	-	-	-	-	-	-	-	P2	15A/1P	X	-	-	30	-	1	2#12 & #12G - 3/4"C	
SF-2	COUNTRYSIDE	1/6	4.4	0.5	120	1	-	FVNR	-	-	-	-	-	-	-	-	-	-	-	P2		X	-	-	30	-	1	2#12 & #12G - 3/4"C	
UH-1	COUNTRYSIDE	1/10	2.7	0.3	120	1	-	MMS	-	-	-	-	-	-	-	-	-	-	-	P2	15A/1P	X	-	-	30	-	1	2#12 & #12G - 3/4"C	

NOTES

1. NOTES 2-6 APPLY TO ALL APPLICABLE LOADS.
2. PROVIDE THERMAL OVERLOAD UNITS FOR ALL STARTERS SIZED TO MATCH LOAD NAMEPLATE AND NEC REQUIREMENTS .
3. BRANCH CIRCUIT WIRING METHODS SHALL BE AS NOTED ON THE DRAWINGS AND/OR SPECIFICATIONS FOR THE APPLICABLE LOCATION. THE FINAL THREE FEET (MAXIMUM) SHALL BE FLEXIBLE METAL OR LIQUIDTIGHT FLEXIBLE METAL CONDUIT.
4. COPPER BRANCH CIRCUIT CONDUCTOR SIZING BASED UPON NEC TABLE 310.15(B)(16). MAKE ADJUSTMENTS TO CONDUCTORS FOR TEMPERATURE OR VOLTAGE DROP THAT EXCEED NEC AND SPECIFICATION CRITERIA.
5. RACEWAY SIZES ARE BASED UPON GRSC AND LFMC WITH THWN CONDUCTORS.
6. VFD SHALL BE CONTROLLED VIA REMOTE 4-20mA OR 0-5V SIGNAL PROVIDED BY THE HVAC ATC CONTRACTOR.
7. REQUIRED DISCONNECT IS PROVIDED INTEGRAL/PREWIRED TO MECHANICAL EQUIPMENT.
8. REQUIRED STARTER IS PROVIDED INTEGRAL/PREWIRED TO MECHANICAL EQUIPMENT.
9. DISCONNECT FOR 2S1W AND 2S2W MOTORS SHALL BE SIX POLE.
10. PROVIDE NEUTRAL FROM SOURCE TO STARTER ONLY FOR 120V CONTROL POWER OF 208V 3PH UNITS.
11. FUSES FOR DISCONNECT SWITCHES SHALL BE CLASS RK5

KEY:

FVNR	FULL VOLTAGE NON-REVERSING
FVR	FULL VOLTAGE REVERSING
2S1W	TWO SPEED SINGLE WINDING
2S2W	TWO SPEED TWO WINDING
RVAT	REDUCED VOLTAGE AUTOTRANSFORMER
RVPW	REDUCED VOLTAGE PART WINDING
RVYDOT	REDUCED VOLTAGE WYE DELTA OPEN TRANSITION
RVYDCT	REDUCED VOLTAGE WYE DELTA CLOSED TRANSITION
MMS	MANUAL MOTOR STARTER
CB	CIRCUIT BREAKER
MCP	MOTOR CIRCUIT PROTECTOR
PB	START AND STOP PUSH BUTTON
HOA	HAND-OFF-AUTOMATIC SELECTOR SWITCH
CPT	CONTROL POWER TRANSFORMER
VFD	VARIABLE FREQUENCY DRIVE W/O BYPASS
VFD/B	VARIABLE FREQUENCY DRIVE W/ BYPASS
CNTCR	CONTACTOR - NO THERMAL OVERLOAD

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E8.00